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THE IBIS,

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QUARTERLY JOURNAL OF ORNITHOLOGY.

EDITED BY

PHILIP LUTLEY SCLATER, M.A., Ph.D., F.R.S.,

SECRETARY TO THE ZOOLOGICAL SOCIETY OF LONDON.

VOL. V. 1893.

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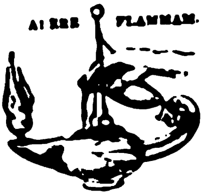
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PREFACE.

IN bringing the thirty-fifth volume of 'The Ibis' to a conclusion, the Editor has but few words to say by way of preface. He may, however, justly congratulate his brother Members of the British Ornithologists' Union on the long life of their Journal and on its present prosperous condition. Not only is the latest number a full one, but valuable materials are already in hand nearly sufficient to fill the first number for next year, and other contributions from various excellent correspondents are promised for future issue. The Editor trusts, therefore, that he may be able to conduct the Sixth Series of 'The Ibis,' the sole Editorship of which he did not consent to undertake without very serious hesitation, to a successful end.

Ornithology has made much quiet progress during the past twelve months, although there is, perhaps, no event of specially transcendent importance to be chronicled. The publication of Count Salvadori's well-executed volume on the Pigeons brings the great Catalogue of Birds one step nearer to its conclusion, besides supplying us with a manual on this much-esteemed group manifestly "up to date." The appointment of Herr Ernst Hartert to the responsible post in this country as Curator of the Tring Museum will also be welcomed by Ornithologists, as bringing a most able and active recruit into a position where he will have great opportunities for doing valuable service to our beloved Science. Our best thanks are due to Mr. Rothschild for this admirable selection.

Lastly, we must call attention to the establishment of the British Ornithologists' Club, which has taken place since we last addressed our readers, and to the very successful accomplishment of its First Session. Nearly all the working Members of our Union have already joined the new Association, and its prosperity fully justifies those who planned the scheme and carried it out. We have no doubt that its meetings and records, which we propose to continue to chronicle in this Journal, will be of material advantage to the progress of Ornithology.

P. L. S.

3 Hanover Square, London, W.
Sept. 28th, 1893.

BRITISH ORNITHOLOGISTS' UNION.

1893.

[An asterisk indicates an Original Member. It is particularly requested that Members will give notice to the Secretary of the Union, 10 Chandos Street, London, W., of any error in their addresses or descriptions in this List, in order that it may be immediately corrected.]

Date of Election.

1893. Ernest L. S. Anne, Major; Blenkinsopp Castle, Greenhead, Carlisle.

1887. Frederick Charles Aplin; Bodicote, Banbury, Oxon.

1888. Oliver Vernon Aplin; Bloxham, Banbury, Oxon.

1885. James Backhouse, Jun., F.Z.S.; Renoso, Victoria Avenue, Harrogate.

5 1892. E. C. Stuart Baker; District Superintendent of Police, Gunjong, Cachar, Assam, India.

1879. Valentine Ball, F.R.S.; Science and Art Museum, Dublin.

1889. Richard James Balston, F.Z.S.; Springfield, Maidstone.

1890. Francis Hubert Barclay; Knott's Green, Leyton.

1872. Hanbury Barclay, Colonel, F.Z.S.; Tingrith Manor, Woburn, Bedfordshire.

10 1885. Hugh G. Barclay; Colney Hall, Norwich.

1884. Henry E. Barnes, Lieut., F.Z.S.; Commissariat Officer, Ahmednagar, Deccan, India.

1889. Gerald Barrett-Hamilton; Kilmannock House, New Ross, Wexford.

1881. Richard Manliffe Barrington, LL.B.; Fassaroe, Bray, co. Wicklow.

1893. Aubyn B. R. Trevor-Battye, F.Z.S., St. Margaret's Mansions, 51 Victoria Street, S.W.

15 1884. Frank E. Beddard, M.A., F.R.S., F.Z.S., Prosector to the Zoological Society of London; Zoological Gardens, Regent's Park, N.W.

1880. Edward Bidwell; 1 Trig Lane, Upper Thames Street, London, E.C.

1884. Charles T. Bingham, Major (Indian Staff Corps), F.Z.S.; Deputy Conservator of Forests, Moulmein, Burma.

Date of
Election

1892. The Rev. Maurice C. H. Bird, M.A.; Brunstead Rectory, Stalham, Norfolk.

1891. F. E. Blaauw, C.M.Z.S.; s'Graveland, Hildersum, Holland.

20 1893. Ernest W. H. Blagg; Greenhill, Cheadle, Staffordshire.

1873. William T. Blanford, F.R.S., F.Z.S.; 72 Bedford Gardens, Kensington, W.

1893. George Bolam, F.Z.S.; Castlegate, Berwick-on-Tweed.

1878. William Borrer, M.A., F.L.S.; Cowfold, Horsham.

1885. William F. Brockholes; Claughton-on-Brock, Garstang, Lancashire.

25 1890. Harry Brinsley Brooke; 33 Egerton Gardens, Kensington, W.

1892. William E. Brooks; Mount Forest, Ontario, Canada.

1868. Thomas Edward Buckley, B.A., F.Z.S.; Rossal, Inverness, N.B.

1872. Sir Walter Lawry Buller, K.C.M.G., Sc.D., F.R.S., C.M.Z.S.; Wellington, New Zealand.

1884. E. A. Butler, Lieut.-Col.; Herringfleet Hall, Lowestoft.

30 1884. Geoffrey Fowell Buxton; Sunny Hill, Thorpe, Norwich.

1889. Ewen Somerled Cameron, F.Z.S.

1888. John Duncan Cameron; Low Wood, Bethersden, near Ashford, Kent.

1892. Charles William Campbell, C.M.Z.S.; H.B.M. Consular Service, Shanghai, China.

1891. John Campbell, Colonel, Governor-General of Prisons; Perth.

35 1879. Sir Thomas David Gibson-Carmichael, Bart., F.Z.S.; Castle Craig, Dolphinton, N.B.

1888. James Carter; Burton House, Masham, Yorkshire.

1890. Charles John Philip Cave, F.Z.S.; Ditcham Park, Petersfield.

1888. Walter Chamberlain, F.Z.S.; Harborne Hall, Harborne, near Birmingham.

1884. Abel Chapman; 14 Thornhill Gardens, Sunderland.

40 1882. Robert William Chase; Southville, Priory Road, Edgbaston, Birmingham.

1889. Stephenson Robert Clarke, F.Z.S.; 25 Chesham Street, S.W., and Croydon Lodge, Croydon, Surrey.

1880. William Eagle Clarke, F.L.S.; Museum of Science and Art, Edinburgh.

1880. E. H. Cooper, Lieut.-Col., F.Z.S.; 42 Portman Square, London, W.

1874. John Cordeaux; Great Cotes, R.S.O., Lincoln.

Date of Election.

45 1888. William Wilfrid Cordeaux; Queen's Bays, India.

1882. Charles B. Cory, F.Z.S.; 8 Arlington Street, Boston, Mass., U.S.A.

1892. Harold Mitchell Courage; Snowdenham, Bramley, Guildford.

1882. Philip Crowley, F.Z.S.; Waddon House, Waddon, Croydon.

1877. John J. Dalgleish; Brankston Grange, Bogside Station, Stirling, N.B.

50 1874. Charles G. Danford, F.Z.S.; Hatszeg, Siebenbürgen, Hungary, and Conservative Club, St. James's Street, London, S.W.

1883. James Davidson; 32 Drumsheugh Gardens, Edinburgh.

1893. W. E. De Winton; Graftonbury, Hereford, and 38 Great Russell Street, W.C.

1889. William Henry Dobie, M.R.C.S.; 22 Upper Northgate Street, Chester.

1883. Scrope B. Doig; Public Works Department, Bombay.

55 1880. Arthur Dowsett, F.Z.S.; Castle Hill House, Reading.

1865. Henry Eeles Dresser, F.L.S., F.Z.S.; Topclyffe Grange, Farnborough, Beckenham, Kent.

*Henry Maurice Drummond-Hay, C.M.Z.S., Lieut.-Col., Royal Perth Rifles; Seggieden, Perth.

1890. James A. G. Drummond-Hay (Coldstream Guards); Guards' Club, Pall Mall, S.W.

1878. W. Arthur Durnford, J.P.; Elsecar, Barnsley.

60 1876. George Le C. Egerton, Capt. R.N.; Bury Grange, Alverstoke, Hants.

1870. Daniel Giraud Elliot, F.R.S.E., F.Z.S.; American Museum of Natural History, New York.

1884. Algernon Elliott, Deputy Commissioner, Yeotmahl, Berar, H.A.D., India.

1866. Henry John Elwes, F.Z.S.; Colesborne Park, Cheltenham.

1879. Arthur Humble Evans, M.A., F.Z.S.; 9 Harvey Road, Cambridge.

65 1888. William Evans, F.R.S.E.; 18a Morningside Park, Edinburgh.

1891. Alfred Hast Everett, C.M.Z.S.; care of Central Labuan Co., Labuan, Borneo.

1892. William George Fairbridge; 133 Long Market Street, Capetown.

1873. Henry Wemyss Feilden, Col., C.M.Z.S.; West House, Wells, Norfolk, and Junior United Service Club, St. James's, S.W.

Date of Election.

1886. Harold Stuart Ferguson, Lieut. Nair Brigade; Trevandrum, Travancore.

70 1891. Leopold Field, F.Z.S.; St. Stephen's Club, Bridge Street, Westminster, S.W.

1892. Frank Finn, B.A., F.Z.S.; Mote House, Mote Road, Maidstone.

1890. Lionel Fisher; Kandy, Ceylon.

1884. Henry Ogg Forbes, F.Z.S.; 104 Philbeach Gardens, S.W., and care of O. E. Janson, 44 Great Russell Street, W.C.

1880. William Foster; The Hill, Witley, Surrey.

75 1887. W. W. Fowler, M.A.; Lincoln College, Oxford.

1865. Rev. Henry Elliott Fox, M.A.; 12 South Bailey, Durham.

1881. Percy Evans Freke; 9 Sydenham Road, Dundrum, co. Dublin.

1881. Hans Gadow, Ph.D., F.Z.S.; University Zoological Museum, Cambridge.

1886. Charles William Francis, Earl of Gainsborough; Exton Park, Oakham.

80 1885. Sir Ralph Payne Gallwey, Bart.; Thirkleby Park, Thirsk.

1892. John Gerrard; Government Inspector of Mines, Worsley, Manchester.

1879. Ernest Gibson; care of Thos. Gibson, Esq., 1 Eglinton Court, Edinburgh.

*Frederick DuCane Godman, F.R.S., F.Z.S.; 10 Chandos Street, Cavendish Square, London, W.

*Percy Sanden Godman, B.A., C.M.Z.S.; Muntham, Horsham.

85 1874. H. H. Godwin-Austen, Lieut.-Col., F.R.S., F.Z.S.; Shalford House, Guildford.

1884. John G. Goodchild, F.Z.S.; Museum of Science and Art, Edinburgh.

1886. William Graham, F.Z.S.; Manor House, Crayford, Kent.

1890. William R. Ogilvie Grant; 26 Hereford Square, S.W.

1885. F. H. H. Guillemard, M.A., M.D., F.Z.S.; Eltham, Kent.

90 1876. Albert C. L. G. Gunther, M.A., M.D., F.R.S., F.Z.S.; Keeper of the Zoological Department, British Museum (Natural History), London, S.W.

1870. John Henry Gurney, F.Z.S.; Keswick Hall, Norwich, and Athenæum Club, Pall Mall, S.W.

Date of Election.

1890. **Joshua Reynolds Gascoign Gwatkin**; Manor House, Potterne, Devizes.

1891. **George Henry Caton Haigh**; Grainsby Hall, Great Grimsby, Lincolnshire.

1887. **John Pleydell Wilton Haines**; The Lodge, Gloucester.

95 1886. **Edward Hamilton**, M.D., F.L.S., F.Z.S.; 16 Cromwell Place, S.W.

1883. **Lewis Vernon Harcourt**; Malwood, Lyndhurst, Hants.

1876. **Henry Charles Harford**, Major 2nd Wilts Regt.; Glen Froome, Nelson Crescent, Southsea.

1877. **Edward Hargitt**, F.Z.S.; 1 Northanger Road, Streatham Common, S.W.

1893. **Ernst Hartert**; The Museum, Tring, Herts.

100 1868. **James Edmund Harting**, F.L.S., F.Z.S.; Linnean Society, Burlington House, Piccadilly, W.

1893. **William Hartmann**; Tangley Mere, Chilworth, Surrey.

1873. **John A. Harvie-Brown**, F.Z.S.; Dunipace House, Larbert, N.B.

1892. **Edward Suter Hasell**; Victoria, British Columbia.

1868. Rev. **Herbert S. Hawkins**, M.A.; Beyton Rectory, Suffolk.

105 1887. **Charles T. Hebbert**, F.Z.S.; The Rhodrons, Hook, Kingston-on-Thames.

1884. **C. J. Holdsworth**; Hill Top, near Kendal, Westmoreland.

1877. **E. W. H. Holdsworth**, F.Z.S.; South Town, Dartmouth, Devon.

1891. **Arthur H. Holland**; Sta. Elena, Soler, F. C. al Pacifico, Buenos Ayres.

1888. **Herbert Knight Horsfield**; Ivy Lodge, Chapel Allerton, Leeds.

110 1893. **Charles Hose**, F.Z.S.; Resident, Baram, Sarawak, Borneo.

1881. **Robert James Howard**; Hawkhurst, Blackburn, Lancashire.

***Wilfrid Hudleston Hudleston**, M.A., F.R.S., F.Z.S.; 8 Stanhope Gardens, S.W.

1893. **William Henry Hudson**, C.M.Z.S.; Tower House, St. Luke's Road, Westbourne Park, W.

1869. **Allan Octavian Hume**, C.B., C.S.I., F.Z.S.; The Chalet, Kingswood Road, Upper Norwood, S.E.

115 1890. **Henry Charles Vicars Hunter**; 45 Lennox Gardens, S.W.

1870. **Hedworth Hylton, Lord Hylton**, F.Z.S.; Merstham House, Red Hill, Surrey.

Date of Election.

1870. Leonard Howard L. Irby, Lieut.-Col., F.Z.S.; 14 Cornwall Terrace, Regent's Park, N.W.

1888. Frederick J. Jackson, F.Z.S.; 13 Westbourne Square, W.

1892. Henry Ashworth James; 11 Oxford Square, Hyde Park, W.

120 1889. Frederick Ponsonby Johnson; Castlesteads, Brampton, Cumberland.

1891. Henry Hamilton Johnston, C.B., F.Z.S.; The Residency, Zomba, British Central Africa, *viâ* Zanzibar and Chindi.

1880. Henry Robert Kelham, Major, 2nd Bn. Highland Light Infantry; Fyzabad, India.

1882. Philip M. C. Kermode; Hillside, Ramsay, Isle of Man.

1891. J. Graham Kerr; Christ's College, Cambridge.

125 1892. Francis Arnold Knight; Brynmelyn, Weston-super-Mare.

1882. Rev. Edw. Ponsonby Knubley, M.A.; Staveley Rectory, Leeds.

1892. Thomas Geddes Laidlaw; Bank of Scotland, Morningside Branch, Edinburgh, and 8 Morningside Road, Edinburgh.

1884. Herbert Langton; 11 Marlborough Place, Brighton.

1881. Hon. Gerald Lascelles; Queen's House, Lyndhurst.

130 1892. John David Digues de La Touche; Chinese Imperial Maritime Customs, Amoy, China.

1892. Arthur Moore Laws; Little Clacton Lodge, near Colchester.

1885. George Lawson, C.B.; 36 Craven Hill Gardens, Hyde Park, W.

1876. William Vincent Legge, Col. R.A., F.Z.S.; Commandant's Office, Hobart Town, Tasmania, and Cullenswood House, St. Mary's, Tasmania.

1868. Hamon Le Strange, F.Z.S.; Hunstanton Hall, King's Lynn, Norfolk.

135 1875. Paget Walter Le Strange, Col. R.A.; Dol-llan, Llandyssil, South Wales.

1893. Frederick Lewis; Assistant Conservator of Forests, Ratnapura, Ceylon.

1889. Christopher John Leyland; Haggerston Castle, Beal, Northumberland.

1886. Harold Littledale, B.A.; Vice-Principal, The College, Baroda.

*Thomas Lyttelton, Lord Lilford, F.L.S., F.Z.S.; Lilford Hall, Oundle.

Date of Election.

140 1874. John Hayes Lloyd, Col., F.Z.S. ; 95 Adelaide Road, N.W.

1889. Arthur Purvis Loyd, F.Z.S. (late Major 21st Hussars); 3 Queen's Mansions, Victoria Street, S.W.

1877. James Lumsden, F.Z.S.; Arden House, Alexandria, N.B.

1886. Rev. Hugh Alexander Macpherson, M.A.; 11 Victoria Place, Carlisle.

1875. John Wingfield Malcolm, F.Z.S. ; 7 Great Stanhope Street, Mayfair, W.

145 1878. Henry Stacy Marks, R.A., F.Z.S.; 17 Hamilton Terrace, St. John's Wood, N.W.

1878. Rev. Murray A. Mathew, M.A., F.L.S.; Buckland Dinham, Frome, Somersetshire.

1883. Edmund Gustavus Bloomfield Meade-Waldo, F.Z.S.; Rope Hill, Lymington, Hants.

1886. John Guille Millais, F.Z.S.; 2 Palace Gate, Kensington, W.

1879. Frederick Shaw Mitchell; Edmonton, Alberta, N. W. T., Canada.

150 1892. St. George Mivart, Ph.D., M.D., F.R.S.; Hurstcote, Chilworth, Surrey.

1890. Thomas James Monk; St. Anne's, Lewes, Sussex.

1864. Alexander Goodman More, F.L.S.; 74 Leinster Road, Rathmines, Dublin.

1887. George Morgan, Lieut.-Col.; Biddlesden Park, Brackley.

1886. George Muirhead, F.Z.S.; Mains of Haddo, Aberdeen.

155 1893. William H. Mullens, M.A., F.Z.S.; Westfield Place, near Battle, Sussex.

1892. Philip Winchester Munn; Laverstoke, Whitchurch, Hants.

1885. Edward Neale; 43 Charlotte Street, Portland Place, W.

1882. Thomas Hudson Nelson; Sandringham House, Redcar, Yorkshire.

1876. Hugh Nevill; Newton Villa, Godalming.

160 1872. Francis D'Arcy William Clough Newcome; Feltwell Hall, Brandon, Suffolk.

*Alfred Newton, M.A., F.R.S., F.Z.S., Professor of Zoology in the University of Cambridge; Magdalene College, Cambridge.

*Sir Edward Newton, K.C.M.G., M.A., F.L.S., C.M.Z.S.; 23 Wellington Esplanade, Lowestoft.

Date of
Election.

1891. Digby Seys Whitlock Nicholl, F.L.S., F.Z.S.; The Ham, Cowbridge, Glamorganshire.

1886. Howard Hill John Nicholls, M.R.C.S.; The Moat, Eastbourne.

165 1876. Francis Nicholson, F.Z.S.; Oakfield, Ashley Rd., Altrincham.

1887. George Cameron Norman, F.Z.S.; 68 Lombard Street, E.C.

1882. Eugene William Oates, F.Z.S.; Toungo, Burma.

1892. Fergus Menteith Ogilvie, M.A., F.Z.S.; Sizewell House, Leiston, Suffolk.

1889. Bertram Savile Ogle; Hill House, Steeple Aston, Oxford.

170 *Sir John W. P. Campbell-Orde, Bart., F.Z.S., late Captain 42nd (Royal Highland) Regiment; Kilmory House, Lochgilphead, Argyllshire, N.B.

1883. Henry Parker, C.E., F.Z.S., Irrigation Officer, P.W.D.; Kurunegala, Ceylon.

1880. Thomas Parkin, M.A., F.Z.S.; Fairseat, High Wickham, Hastings.

1891. Robert Patterson; Tilecote, Malone Park, Belfast.

1884. R. Lloyd Patterson, F.L.S.; Croft House, Holywood, co. Down.

175 1891. Henry J. Pearson; Bramcote, Beeston, Notts.

1891. Frank Penrose; 4 Harley Street, W.

1886. E. Cambridge Phillips; The Elms, Brecon.

1886. E. Lort Phillips, F.Z.S.; 79 Cadogan Square, S.W.

1888. George Thorne Phillips; Wokingham, Berkshire.

180 1893. Thomas Digby Pigott, C.B.; 5 Ovington Gardens, S.W.

1883. Thomas Mayer Pike, M.A.; care of R. H. Porter, 18 Princes Street, Cavendish Square, W.

1888. Mervyn Owen Wayne Powys, B.A., F.Z.S.; Oriental Club, Hanover Square, W.

1893. William Plane Pycraft; Department of Comparative Anatomy, University Museum, Oxford.

1888. Charles Robert Eustace Radclyffe; 1st Life Guards, and Hyde, Wareham, Dorset.

185 1872. R. G. Wardlaw Ramsay, Major, F.Z.S.; Tillicoultry House, Tillicoultry, N.B.

1879. Herbert Evelyn Rawson, F.Z.S.; Fallbarrow, Windermere.

1888. Robert H. Read; care of Sir John Fowler, 2 Queen Square Place, Westminster, S.W.

Date of Election.

1877. Savile G. Reid, late Capt. R.E., F.Z.S.; Froyle House, Alton, Hants.

1893. Percy Rendall, M.D., F.Z.S.; Eureka City, Barberton, South African Republic.

190 1893. The Hon. L. Walter Rothschild, F.Z.S.; Tring Park, Tring, Herts.

1883. William Herbert St. Quintin, F.Z.S.; Scampston Hall, Rillington, Yorkshire.

*Osbert Salvin, M.A., F.R.S., F.Z.S.; 10 Chandos Street, W., and Hawksfold, Fernhurst, Haslemere.

1870. Howard Saunders, F.L.S., F.Z.S.; 7 Radnor Place, Hyde Park, W.

*Philip Lutley Sclater, M.A., Ph.D., F.R.S.; Secretary to the Zoological Society of London, 3 Hanover Square, W., and Odiham Priory, Winchfield.

195 1891. William Lutley Sclater, M.A., F.Z.S.; Eton College, Windsor.

1881. John Scully, F.L.S., F.Z.S., Surgeon-Lt.-Col.; care of Messrs. H. S. King & Co., 65 Cornhill, E.C.

1873. Henry Seebohm, F.Z.S.; 22 Courtfield Gardens, S.W.

1889. Humphrey Patricius Senhouse, B.A.; The Fitz, Cockermouth, Cumberland.

1871. Richard Bowdler Sharpe, LL.D., F.L.S., F.Z.S.; Senior Assistant, Zoological Department, British Museum (Natural History), South Kensington, S.W.

200 1886. William Carstairs Shaw; Bank of Madras, Madras.

1870. G. Ernest Shelley, F.Z.S., late Captain, Grenadier Guards; 10 Thurloe Square, S.W.

1865. Rev. Charles William Shepherd, M.A., F.Z.S.; Trotterscliffe Rectory, Maidstone, Kent.

1881. F. B. Simson, F.Z.S.; Broom Hill, Spratton, Northampton.

1882. Rev. Henry H. Slater, M.A., F.Z.S.; Thornhaugh Rectory, Wansford, Northants.

205 1864. Rev. Alfred Charles Smith, M.A.; Old Park, Devizes, Wilts.

1881. Thomas Southwell, F.Z.S.; 10 The Crescent, Chapel Field, Norwich.

1893. Samuel S. Stanley; 3 Regent Grove, Leamington, Warwickshire.

1875. A. C. Stark.

Date of Election.

1889. William Stoate; Belmont, Burnham, Somerset.

210 1893. Charles Stonham, F.R.C.S., F.Z.S.; 4 Harley Street, Cavendish Square, W.

1881. Robert Wright Studdy, Col. (late Manchester Regiment); Waddeton Court, Brixham, Devon.

1887. Frederick William Styan, F.Z.S.; Ben Craig, Bayham Road, Sevenoaks, and Shanghai, China.

1887. John Swinburne; Beauregard, Hauteville, Guernsey.

1882. Charles Swinhoe, Col. Bombay Staff Corps, M.A., F.L.S., F.Z.S.; Avenue House, Cowley Road, Oxford.

215 1884. William C. Tait, C.M.Z.S.; Oporto, Portugal.

*Edward Cavendish Taylor, M.A., F.Z.S.; 74 Jermyn Street, S.W.

1873. William Bernhard Tegetmeier, F.Z.S.; 16 Alexandra Grove, North Finchley, N.

1889. Edward Priaulx Tennant; 40 Grosvenor Square, W., and The Glen, Innerleithen, N.B.

1886. Horace A. Terry, Captain (Oxfordshire Light Infantry); Burvale, Walton-on-Thames.

220 1891. William Blundell Thornhill; Castle Cosey, Castle Bellingham, Ireland.

1893. Dixon L. Thorpe; 41 Aglionby Street, Carlisle.

*Rev. Henry Baker Tristram, M.A., LL.D., F.R.S., C.M.Z.S., Canon of Durham; The College, Durham.

1864. Henry Morris Upcher, F.Z.S.; Sheringham Hall, Norfolk, and Feltwell Hall, Brandon.

1890. Stephen Venour; Fern Bank, Altrincham, Cheshire.

225 1881. William Willoughby Cole Verner, Major (Rifle Brigade); Junior United Service Club, S.W.

1884. A. S. Verey; Heronsgate, near Rickmansworth.

1891. C. W. de Vis, Queensland Museum, Brisbane; care of Williams and Norgate, 14 Henrietta Street, Covent Garden, W.C.

1886. H. D. Wade-Dalton, Col. 2nd Batt. Middlesex Regiment, Quetta.

1881. Thomas, Lord Walsingham, F.R.S., F.Z.S.; Merton Hall, Thetford, Norfolk.

230 1874. Charles Bygrave Wharton, F.Z.S.; Hounsdown, Totton, Hants.

1878. Henry Thornton Wharton, M.A., F.Z.S.; Madresfield, Acol Road, Priory Road, West Hampstead, N.W.

Date of Election.

1891. **Benjamin Ingham Whitaker**; Hesley Hall, Tickhill, Rotherham.

1881. **Joseph Whitaker**, F.Z.S.; Rainworth Lodge, Mansfield, Notts.

1891. **Joseph J. S. Whitaker**; Malfitano, Palermo, Sicily.

235 1887. **Jeffery Whitehead**; Southwood, Bickley, Kent.

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Page
X. Bulletin of the British Ornithologists' Club. Nos. I.–III. 114

XI. Notices of recent Ornithological Publications:—

1. Allen on the Woodpeckers of North America . . . 124
2. Allen on Birds from Venezuela 125
3. Allen on a new Gallinule 125
4. Bendire's Life-Histories of North-American Birds . . 126
5. Bocage on Birds from Benguela 126
6. Bocage on Birds from Dahomey 127
7. Buller on New-Zealand Birds 127
8. Buller on *Apteryx maxima* 127
9. Büttikofer on the Genus *Tatare* 128
10. Büttikofer on *Thamnolæa nigra* 128
11. Büttikofer on Birds from Liberia 128
12. Büttikofer on a Sumatran Weaver-bird 129
13. Büttikofer on Birds from Flores, Sumba, and Rotti . 129
14. Cherrie on two new *Tyrannidæ* 129
15. Clarke's Report on the Great Skua 129
16. Collett on the Birds of Arctic Norway 130
17. D'Urban and Mathew's 'Birds of Devon' 131
18. Evans on the Birds of the Melrose District 132
19. Evans on the Grebe of Ross-shire 133
20. Forbes on Extinct Birds of New Zealand 133
21. Forbes on *Cyanorhamphus erythrotis* 133
22. Godman and Salvin's 'Biologia Centrali-Americana'. 134
23. Hamilton on Moas' Gizzard-stones 134
24. Hamilton on the Genus *Aptornis* 135
25. Hartert on a new *Batrachostomus* 135
26. Hartlaub on Birds from China 135
27. Harvie-Brown and Buckley on the Fauna of Argyll and the Inner Hebrides 136
28. Hutton on the Moas 137
29. Junker's Travels in Africa 137
30. Macpherson and Ferguson's 'Vertebrate Fauna of Lakeland' 138
31. Merriam on Geographical Distribution in North America 139
32. Meyer on Birds from Kaiser-Wilhelms-Land . . 140
33. Meyer on the Birds of Sumba 141
34. Meyer and Helm's Sixth Report on the Birds of Saxony 141

Page
35. Nicolls and Eglington's 'Sportsman in South Africa' 141
36. North on Australian Nests and Eggs 142
37. Parker on the Development of *Apteryx* 143
38. Quelch on the Birds of Prey of British Guiana . . 143
39. Regalia on the Claws and Spurs of the Bird's-hand . 144
40. Report of the International Ornithological Congress at Budapest 144
41. Rhoads on the Birds of Texas and Arizona 147
42. Ridgway on the Humming-birds 147
43. Ridgway on two new Subspecies of *Basileuterus* . . 148
44. Scott's 'Notes on the Birds of Florida' 148
45. Stone on the Birds of West Greenland 149
46. Suchetet on Wild-bred Hybrids 149
47. Winge on Birds observed at the Danish Light-stations 150

XII. Letters, Extracts, Notices, &c.

Letters from Heer F. E. Blaauw; Heer H. W. de Graaf; Mr. H. E. Dresser; and Mr. W. B. Fairbridge. Report of the British Museum for 1892; The Bird-collections in the Oxford University Museum; The Godwin-Austen Collection of Birds; Birds of Antigua, W.I.; The Preservation of Native Birds in New Zealand; Surnames taken from Birds; New Ornithological Periodical; Prince Albert's Lyre-bird in Captivity; The British Museum Catalogue of Birds; Naturalists Abroad and at Home. Obituary: Harry Berkeley James and Robert W. Shufeldt 150

NUMBER XVIII., *April.*

XIII. On the Birds of Aden. By Lieut. H. E. BARNES, F.Z.S. 165

XIV. On the Occurrence of the Sharp-tailed Sandpiper (*Tringa acuminata*) in Norfolk. By HENRY SEEBOHM. With an Appendix by THE EDITOR. (Plate V.) 181

XV. List of Birds observed in the Canary Islands. By E. G. MEADE-WALDO 185

XVI. On a remarkable new Finch from the Highlands of Bolivia. By HANS, Graf von BERLEPSCH. (Plate VI.) . . . 207

Page

XVII. Remarks on the Birds of the Gilbert Islands. By L. W. Wiglesworth 210

XVIII. On the Bird indicated by the Greek 'Αλκυών. By H. B. Tristram, D.D., F.R.S. 215

XIX. On the Species of *Zosterops* found in the Island of Java. By Henry Seebohm, F.Z.S. 217

XX. On the Species of *Merula* found in the Island of Java. By Henry Seebohm, F.Z.S. 219

XXI. Notes on Birds observed during a Collecting Expedition to Eastern Africa. By Frank Finn, B.A., F.Z.S. 223

XXII. On some Genera of Oriental Barbets. By W. T. Blanford, F.R.S. 234

XXIII. On *Acredula caudata* and its allied Forms. By H. E. Dresser, F.L.S., F.Z.S. 240

XXIV. Notes on *Paramythia montium* and *Amalocichla sclateriana*. By The Editor. (Plate VII.) 243

XXV. Note on the Proper Use of the Generic Terms *Certhiola* and *Cœreba*. By The Editor 246

XXVI. Bulletin of the British Ornithologists' Club. Nos. IV.–VI. 248

XXVII. Notices of recent Ornithological Publications:—

48. Buttikofer on the Species of *Rhipidura* 265
49. Cory's 'Catalogue of West-Indian Birds' 266
50. Godman and Salvin's 'Biologia Centrali-Americana'. 267
51. Hartlaub on four rare Rails 267
52. Lilford's 'Coloured Figures of British Birds' . . . 268
53. Martorelli on the Migration of Birds 268
54. Middendorff on Bird-life on the Russian Lighthouses. 268
55. Mockler-Ferryman's Voyage up the Niger 269
56. North on the Nesting of *Manucodia* 269
57. North on Additions to the Tasmanian Avifauna . . 269
58. Pigott on London Birds 270
59. Schalow on *Pratincola rubicola* in N.E. Germany . . 270

Page
60. Shufeldt on the Fossil Birds of the Oregon Desert Region 270
61. Stejneger on Additions to the Japanese Avifauna . . 272
62. Stejneger on Mr. Henson's Collection from Yezo, Japan 272
63. Thomson's 'British New Guinea' 273
64. Traquair's Address to the Royal Physical Society . . 275

XXVIII. Letters, Extracts, Notices, &c.:—

Letters from Mr. John M. Cook; Prof. R. Collett; Mr. W. G. Fairbridge; Count T. Salvadori; Mr. Henry O. Forbes; Mr. John Whitehead; and the Hon. Walter Rothschild. The Preservation of the Native Birds of New Zealand; News of Ornithologists Abroad; The Humming-birds of Paraguay; The Sheathbill in Ireland; New British Polar Expedition. Obituary: The Rev. F. O. Morris; Henry Whitely 275

NUMBER XIX., *July*.

XXIX. On the Birds of the Islands of Aruba, Curaçao, and Bonaire. By ERNST HARTERT. (Plates VIII., IX.) 289

XXX. On the Collection of Raptorial Birds in the Norwich Museum. By J. H. GURNEY 338

XXXI. Notes on the Nesting of some Shetland Birds. By ERNEST W. H. BLAGG, M.B.O.U. 350

XXXII. On the Cause of Variation in the Shape of the Eggs of Birds. By HENRY SEEBOHM 359

XXXIII. On a Point in the Mechanism of the Bill in Birds. By W. P. PYCRAFT, Anatomical Department, University Museum, Oxford 361

XXXIV. Swifts and Humming-birds. By FREDERIC A. LUCAS 365

XXXV. On the Occurrence of White's Thrush in European Russia. By Dr. M. MENZBIER, Professor in the University of Moscow 371

Page

XXXVI. On the Nest and Eggs of *Gerygone magnirostris*, Gould. By ALFRED J. NORTH, F.L.S. 373

XXXVII. Notes on the Synonymy of some Palæarctic Birds. By H. E. DRESSER, F.Z.S., F.L.S. 375

XXXVIII. On the Avifauna of Mount Dulit and the Baram District, in the Territory of Sarawak. By CHARLES HOSE, F.Z.S. (Plates X., XI.) 381

XXXIX. On the Birds of Hainan. By F. W. STYAN, F.Z.S., M.B.O.U. (Plate XII.) 424

XL. Bulletin of the British Ornithologists' Club. Nos. VII.-IX. 437

XLI. Notices of recent Ornithological Publications:—

65. Agassiz on the Progress of the Museum of Comparative Zoology 451
66. Buttikofer on a Species of *Rhipidura* 451
67. Buttikofer on *Merula javanica* and its allies . . . 452
68. Chapman on Cuban Birds and on the Origin of the Antillean Avifauna 452
69. Chapman and Buck's 'Wild Spain' 453
70. Collett on *Lanius excubitor* and allied forms . . . 454
71. Collett on Birds from the New Hebrides 454
72. Foster's Bibliography of American Naturalists . . . 455
73. Giglioli and Manzella on Italian Birds 455
74. Gordon on 'Our Country's Birds' 456
75. Harvie-Brown on the Birds of the Shetlands . . . 456
76. Hudson's 'Idle Days in Patagonia' 457
77. Koenig on the Birds of Tunis 457
78. Le Souef on the Nesting of *Ptilorhis victoriæ* . . . 459
79. Lorenz on the Birds of Austro-Hungary 459
80. Meyer on *Aquila rapax* from Astrachan 459
81. Salvadori on a new Fruit-Pigeon 460
82. Satounine on the Birds of Moscow 460
83. Sharpe's 'Monograph of the *Paradiseidæ*' 461
84. Sharpe's Index to Gould's Bird-Books 461
85. Stolzmann on the Ornithology of Transcaspia . . . 462
86. Wilson and Evans's 'Aves Hawaiienses' 463

Page

XLII. Letters, Extracts, Notices, &c.

Letters from Mr. R. Lloyd Patterson; Dr. Otto Finsch; Heer F. E. Blaauw; Count T. Salvadori; Mr. A. H. Holland; and Mr. F. W. Styan. The Crocodile and its Bird; Anniversary Meeting of the British Ornithologists' Union, 1893; *Parus colletti*, Stejneger; Bailly's 'Ornithologie de la Savoie;' Tristram's Grakle in Captivity; Great Bustards in the Zoological Society's Gardens; Ornithologists on their Travels. Obituary: M. Olphe-Galliard and Mr. W. R. Davison . . . 463

NUMBER XX., *October.*

XLIII. On the Egg of the Empress Augusta-Victoria's Paradise-bird. By Dr. A. B. MEYER. (Plate XIII.) . . . 481

XLIV. Field-Notes on the Birds of Estancia Sta. Elena, Argentine Republic. By A. H. HOLLAND. With Remarks by P. L. SCLATER 483

XLV. A Review of the Species of the Family *Pittidæ*. By JOHN WHITEHEAD 488

XLVI. Notes on certain Species of New-Zealand Birds. By W. W. SMITH, Ashburton, N. Z. 509

XLVII. A List of the Birds inhabiting the Chatham Islands. By H. O. FORBES, F.R.G.S., M.B.O.U. (Plates XIV., XV.) . 521

XLVIII. Bornean Notes. By R. BOWDLER SHARPE, LL.D., F.L.S., &c. 546

XLIX. On the Mechanism of the Upper Mandible in the *Scolopacidæ*. By R. W. SHUFELDT, M.D., C.M.Z.S. 563

L. On the Validity of *Chrysotis canifrons*. By GEO. N. LAWRENCE 566

LI. Bulletin of the British Ornithologists' Club. No. X. . 567

LII. Notices of recent Ornithological Publications:—

87. Barboza du Bocage on the Birds of Angola . . . 576
88. Bryden on South-African Birds 577

Page
89. Elliot's Monograph of the *Pittidæ* 578
90. Fisher on the Hawks and Owls of the United States. 578
91. Fisher on the Birds of the Death-Valley Expedition. 580
92. Hatch on the Birds of Minnesota 581
93. Helms on the Birds of South Greenland 581
94. Hudson's 'Birds in a Village' 581
95. Keeler on the Colours of Birds 582
96. Lorenz's Ornithological Excursion to the Lower Danube 583
97. Meyer on a new Subspecies of *Goura* 583
98. A. Newton and Gadow's 'Dictionary of Birds' . . 584
99. E. Newton and Gadow on Fossil Birds' Bones from Mauritius 584
100. North's Oological Notes on Australian Birds . . . 585
101. Oustalet on Birds from the Congo 586
102. Pavesi on a Hybrid Duck 586
103. Pigott's London Birds and other Sketches 586
104. Reichenow on the Birds collected by Dr. Stuhlmann in East Africa 587
105. Salvadori's Catalogue of the Pigeons 587
106. Salvadori on *Merula alpestris* 589
107. Shufeldt on the Position of *Chionis* 589
108. Shufeldt on *Hesperornis* 590
109. Swann on the Birds of London 590
110. Whitehead on the Exploration of Kina Balu . . . 590

LIII. Letters, Extracts, Notices, &c.:—

Letters from Sir John Campbell-Orde; Mr. W. P. Pycraft; Mr. W. L. Sclater; and Mr. J. A. Harvie-Brown. Turacin; Notes on the Birds of Chili; Mr. Perkins's Progress in the Sandwich Islands; The Bird-collection in the University Museum, Cambridge; The Collection of Austro-Hungarian Birds at Vienna; Dr. P. Leverkuhn. List of Ornithological Works in course of Publication and Dates of the last Parts issued 592

Index of Scientific Names 599
Index of Contents 617
Titlepage, Preface, List of Members, and Contents.

PLATES IN VOL. V.

SIXTH SERIES.

		Page
I.	Smilorhis whytii	11
II.	Hyphantornis bertrandi	23
III.	Haplopelia johnstoni	28
IV.	Map of Aden	57
V.	Tringa acuminata	183
VI.	Compsospiza garleppi	208
VII.	Paramythia montium	244
VIII.	Map of the West Indian Islands	289
IX.	Fig. 1. Chrysotis ochroptera Fig. 2. Chrysotis rothschildi	328
X.	Oriolus hosii	393
XI.	Scops brookii	417
XII.	Arboricola ardens	436
XIII.	Eggs of Paradisea augustæ-victoriæ	481
XIV.	Eggs of Chatham Islands' Birds	521
XV.	Fig. 1. Gallinago pusilla, pull. Fig. 2. Thinornis novæ-zealandiæ, pull.	

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SIXTH SERIES.

No. XVII. JANUARY 1893.

I.—*List of Birds collected by Mr. Alexander Whyte, F.Z.S., in Nyassaland.* By Captain G. E. Shelley, F.Z.S. *With a Preface by* The Editor.

(Plates I.–III.)

a. *Preface.* By The Editor.

In the 'Proceedings' of the Zoological Society of London for 1891 * will be found a report of the discussion on the new territory called "British Central Africa," which was held by the Society on May 5th of that year, and which mainly served to show how little was our knowledge of the fauna of this extensive region. It was then announced on the part of Mr. H. H. Johnston, C.B., F.Z.S., H.B.M. Commissioner, that he wished to make a thorough examination of the fauna, flora, and geology of the new district under his charge, and for that purpose had engaged Mr. Alexander Whyte, F.Z.S., to accompany him as Naturalist and to devote himself to the scientific exploration of the country. A few days after the meeting in question, Mr. Whyte and the rest of Mr. Johnston's Staff, under the command of Capt. B. L. Sclater, R.E., F.R.G.S., proceeded *viâ* Zanzibar to Nyassaland, and have since that period been actively engaged in the discharge of their respective duties.

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* See P. Z. S. 1891, p. 301.

Before he started Mr. Johnston had arranged with the British South Africa Company, within whose territories British Central Africa is situated, that the Natural History Collections made by Mr. Whyte should be handed over to my care. In June last I had accordingly the pleasure of receiving the first instalment. This embraced about 30 specimens of Mammals, 430 of Birds, and 90 of Reptiles and Batrachians, besides other objects. My friend Capt. G. E. Shelley, F.Z.S., one of our leading authorities on Ethiopian Ornithology, kindly undertook to determine the birds for me, and has furnished me with the following list.

Capt. Shelley points out that the Nyassaland collection is of special interest with regard to the question of the zoological boundaries between Eastern and Southern Africa. It is a well-established fact that the Quanza River forms a very strongly marked barrier between the faunas of Western and Southern Africa, probably owing to the great dissimilarity in the landscape of the opposite banks of that river, but such does not seem to be the case with the River Zambesi. It appears to him, after examining this collection, that the most natural boundary for the South-African Zoological Subregion, on the eastern side, will include the highland districts which border the watershed of the Zambesi and Lake Nyassa. Thus the South-African Subregion will extend on the north to about 10° S. lat., and on the east over the high border-land between Lake Nyassa and the coast, leaving a great portion of the province of Quilimane in the East-African Subregion.

The present collection of 430 specimens was made by Mr. Whyte principally in three localities in the Shiré Highlands—Mount Milanji, Mount Zomba, and Mpimbi.

1. Mount Milanji, as we learn from Mr. Whyte's report on it to Mr. Johnston *, is a large mountain mass in the ex-

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* See abstract of this Report in 'Nature,' vol. xlvi. p. 482 (15th Sept., 1892).

treme south-east corner of Nyassaland, drained on the west by the head waters of the Ruo, one of the affluents of the Shiré, and on the east by the Lukuga and other smaller streams, which run into the Indian Ocean north of the Zambesi. It is described by Mr. Whyte as an isolated range of, for the most part, precipitous mountains, the main mass forming a huge natural fortress of weather-worn precipices or very steep rocky ascents, sparsely clothed with vegetation. Many of its gullies and ravines are well wooded, and in some of them fine samples of grand African virgin forest are met with. Mr. Whyte's ascent, on the 20th of October, was made up the south-east face of Milanji, over steep grassy hills and across rocky streams, full of large water-worn granite boulders. Further on precipices were encountered, and it was necessary to clamber up, holding on by tufts of grass, roots, and scrub, after which a wooded gorge was entered and welcome shade was obtained from the forest trees.

Here an interesting change in the vegetation was at once perceptible, the plants of the lower slope being mostly replaced by other species. These in many cases approached the flowers of temperate climes, such as brambles and well-known forms of *Papilionaceæ* and *Compositæ*. Ferns, too, became more numerous, and now and again were encountered perfect fairy dells of mosses, selaginellas, and balsams, with miniature water-falls showering their life-giving spray on the little verdant glades, while overhead hoary lichens and bright festoons of elegant long-tasselled lycopods hung from the moss-covered trees. After they had passed through some dense thickets of bamboo, and climbed up an ugly barrier of precipitous cliffs, another hour's ascent, the latter part of which was through a steep grassy glen, brought Mr. Whyte and his companions to the highest ridge of Milanji, about 9300 feet above the sea-level.

Hence was a splendid view over rolling hills of grassy sward divided by belts of dark-green forest, and the climate was found to be delightfully cool and bracing, with a clear dry atmosphere of about 60° Fahr. Altogether two weeks were spent at three different sites on this high plateau, and good collections of its natural history were made, although rain and mist occasionally interfered with the operations of the naturalists.

The flora of the mountain proved to be of great interest, being quite distinct from that of the surrounding plains, and even from that of the lower slopes. Tree-ferns were found to attain a great size in the damp, shady forest, and one was measured 30 feet in height and 2 feet in diameter at its base. The display of wild flowers is described as "gorgeous." Creamy-white and yellow helichrysums, mingled with purple and blue orchids and irises, and graceful snow-white anemones were all blooming in wild profusion, and rearing their heads from a bed of bright green grassy sward. But the most striking botanical feature of the plateau of Milanji was the cypresses, formerly apparently quite abundant, but now confined to a few of the upper ravines and valleys, where the annual bush-fires, which take place in the dry months of August and September, cannot reach them. In some places hundreds of these giant trees thus destroyed lay prostrate, piled one above another in every stage of destruction. One of these dead conifers was found to measure 140 feet in length and 5½ feet in diameter at 5 feet from its base. The foliage of this cypress is juniper-like. The timber, of a dull reddish-white colour, is of excellent quality and easily worked. Ripe cones of this fine tree were procured, and, as stated in a subsequent letter, have already germinated in the experimental garden at Zomba *.

The fauna of the mountain was found to be of nearly equal interest to the flora, but in the short space of time available it was not possible to make so nearly a complete collection. Raptorial birds were very scarce, but Passeres were plentiful. The grassy lands of the summits were tenanted by a small, dark brown Quail, a Pipit, two Grass-

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* This so-called "cypress" is a new conifer of the genus *Widdringtonia*, which will be described as *Widdringtonia whytii* in a paper upon the plants collected by Mr Whyte, now being prepared in the Botanical Department of the British Museum.

Warblers, and the ubiquitous Great-billed Raven (*Corvultur albicollis*), which, however, was not so numerous as on the plains below. In the adjoining forest bird-life was abundant. Bulbuls, Flycatchers, Warblers, Finches, and Honey-birds joined in chorus in celebrating the springtime and nesting-season, which was then in full progress. Altogether about 200 specimens of birds were obtained. Of mammals few were met with. The beasts of prey consisted of the leopard, the spotted hyæna, the serval, and an ichneumon. Examples of three species of *Muridæ* were also obtained, and a little antelope, probably of the genus *Neotragus*, was observed, but not procured. A few snakes were likewise met with.

2. Mount Zomba is more nearly in the centre of the Shiré Highlands, between the Upper Shiré and Lake Shirwa. It rises to a height of about 5133 feet, and forms the water-parting between the Shiré and the Shirwa Basin. Upon its slopes is placed the British Residency of Zomba, at a height of 2971 feet, and here, it is said, will be the future capital city of Nyassaland.

Capt. Sclater, writing from Blantyre on May 29th last year, speaks of it as follows:—"To-day we have been up to the top of Zomba. It is a very extraordinary feature of this country that nearly all the mountains are simply huge tables, with precipices all round. Zomba is one of these, also Milanji, and others; very few really rise to peaks. On the top of Zomba we found the climate and flora like those of the Cape. The general plateau is from 4000 to 5000 feet above the sea-level; it is covered with short grass and clumps of trees, similar to Milanji; the difference is that there are no cedars * and much less forest; the soil also is better. There is one fine large valley (that of the stream running down by the Residency) which formerly was thickly populated; but some thirty years ago all the people were sold and made slaves of by the invading Yaos, so that it is now uninhabited."

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* *I. e.* Widdringtonias: see footnote, p. 4.

3. Mpimbi is the port of Zomba on the Upper Shiré, whence there is steam-navigation to Lake Nyassa.

Capt. Shelley refers the 430 specimens of birds collected by Mr. Whyte in these three localities to 134 species, of which, as will be seen by his list, he considers twelve to be new to science.

Amongst these of special interest are the two new Barbets, *Melanobucco zombæ* and *Smilorhis whytii*, both from Mount Zomba, and the new Thrush *Turdus milanjensis*, from Mount Milanji. The new *Callene anomala*, from Mount Milanji, is also a very noticeable form.

Of the 134 species recorded by Capt. Shelley, 47 are of somewhat wide range or are migrants over the whole of Africa. Of the remaining 87, there are 45 which may be said to belong to the South-African Subregion, 19 are East-African, while 23 may be said to be characteristic of the Zambesi and Shiré districts.

Of these 23 species, several find their nearest allies in Angolan species, while there is also a distinct element of the East-African *mountain* fauna, shown by the occurrence of such forms as *Xenocichla fusciceps*, *Pachyprora dimorpha*, and *Trochocercus albonotatus*.

b. *List of Birds*. By Capt. SHELLEY.

1. MELIERAX GABAR.

Melierax gabar, Sharpe, ed. Layard's B. S. Afr. pp. 19, 795; id. Cat. i. p. 89.

No. 9. Zomba, Sept.

2. ASTURINULA MONOGRAMMICA.

Asturinula monogrammica, Sharpe, B. S. Afr. p. 42; id. Cat. i. p. 275.

No. 8, ♂. Zomba, Aug., Sept.

3. LOPHOAETUS OCCIPITALIS.

Lophoaetus occipitalis, Sharpe, B. S. Afr. p. 41; id. Cat. i. p 274.

No. 92. Zomba Plateau, 6000 feet, March.

12. Eurystomus afer.

Eurystomus afer, Sharpe, B. S. Afr. pp. 106, 806; id. Cat. xvii. p. 30.

Nos. 58–9. Zomba, Sept. 4; Milanji, Oct. 21.

13. Ceryle rudis.

Ceryle rudis, Sharpe, B. S. Afr. pp. 110, 807; id. Cat. xvii. p. 109.

No. 78. Mpimbi, Upper Shiré, Feb. 28.

14. Halcyon orientalis.

Halcyon orientalis, Sharpe, B. S. Afr. pp. 116, 807; id. Cat. xvii. p. 238.

No. 58. Zomba, Sept. 2 and 18.

15. Halcyon chelicutensis.

Halcyon chelicutensis, Sharpe, B. S. Afr. pp. 117, 807; id. Cat. xvii. p. 239.

No. 46. Zomba, Sept.

16. Halcyon cyanoleuca.

Halcyon cyanoleuca, Sharpe, B. S. Afr. pp. 120, 803; id. Cat. xvii. p. 245.

No. 70. Zomba, Feb. 11.

17. Lophoceros melanoleucus.

Tockus melanoleucus, Sharpe, B. S. Afr. p. 127.

Lophoceros melanoleucus, Grant, Cat. B. xvii. p. 399.

No. 12, ♂. Zomba, Aug.

18. Upupa africana.

Upupa africana, Sharpe, B. S. Afr. pp. 134, 808; Salvin, Cat. B. xvi. p. 14.

No. 19, ♂. Zomba, Sept. 2.

19. Irrisor viridis.

Irrisor erythrorhynchus, Sharpe, B. S. Afr. pp. 138, 808.

Irrisor viridis, Salvin, Cat. B. xvi. p. 17.

No. 21. Milanji, Dec. 11.

20. Rhinopomastes cyanomelas.

Rhinopomastes cyanomelas, Sharpe, B. S. Afr. pp. 138, 809, Salvin Cat. B. xvi. p. 24.

27. Coccystes cafer.

Coccystes cafer, Sharpe, B. S. Afr. pp. 158, 810; Shelley, Cat. xix. p. 221.

No. 34. Zomba, Jan. 10.

28. Coccystes hypopinarius.

Coccystes jacobinus, Sharpe, B. S. Afr. pp. 158, 810 (part).

Coccystes hypopinarius, Shelley, Cat. xix. p. 220, pl. 11. fig. 2.

No. 35. Zomba, Jan. 15. This is a well-marked specimen of this southern race.

29. Centropus natalensis.

Centropus superciliosus, Sharpe, B. S. Afr. pp. 163, 810 (part).

Centropus natalensis, Shelley, Cat. xix. p. 362.

Nos. 4, 36. Zomba, Sept. 2 and Jan. 23.

30. Indicator variegatus.

Indicator variegatus, Sharpe, B. S. Afr. pp. 167, 810; Shelley, Cat. xix. p. 7.

No. 49, ♂. Zomba, Sept. 29.

31. Melanobucco zombæ, sp. n.

Similis *M. torquato*, sed fronte, facie laterali, et gutture maculis albicantibus nec rubris ornatis distinguendus. Long. tot. 5·5 poll., alæ 3·5.

Nos. 18, 25. Zomba, Aug. and Sept. Three specimens.

Similar to *M. torquatus*, but differs in having whitish instead of bright scarlet feathers on the head and throat. Total length 5·5 inches, culmen 1, wing 3·5, tail 2·35, tarsus 0·85.

In the British Museum there are two other specimens of this species, collected by Sir John Kirk on the Zambesi. One of these has the pale portions of the head and throat strongly shaded with pink. Sir John Kirk also procured two typical examples of *M. torquatus* from Teté and Shupanga, which are now in the same collection. Last year, when I catalogued the specimens of this family for the British Museum, I looked upon this form as a mere accidental variety, but its re-occurrence in both of the present collections forces me to regard it as a species distinct from both *M. torquatus* and *M. irroratus*.

32. Smilorhis leucotis.

Smilorhis leucotis, Sharpe, B. S. Afr. p. 177; Shelley, Cat. xix. p. 37.

No. 19. Milanji Plains, 4000 feet, Oct. 27.

33. Smilorhis whytii, sp. n. (Plate I.)

Similis *S. leucoti*, sed pectore brunneo distinguenda. Long. tot. 6·7 poll., alæ 3·5.

No. 24, ♀. Zomba, Sept. 1.

Head and neck black; feathers of the forehead and crown without elongated shafts, and many of them having very minute white tips; rictal bristles white; a broad white band on the cheeks beneath the bare skin of the sides of the head; a fairly large white chin-patch; body above and beneath brown, with partial pale edges to the feathers, and passing into white on the centre of the abdomen, thighs, and under tail-coverts; wings dark brown, with a patch of white on the least wing-coverts, and with partial white edges to greater wing-coverts and quills, most conspicuous about halfway down the latter; under wing-coverts and inner margins of the quills white; tail dark brown with an ashy shade; bill and legs black. Total length 6·7 inches, culmen 0·7, wing 3·5, tail 2·2, tarsus 0·9.

This Barbet may be distinguished from *S. leucotis* by its brown breast. I name it after Mr. Alexander Whyte, F.Z.S., who, by the present collections, has added much to our knowledge of East African Ornithology.

34. Campothera smithii.

Campothera smithii, Sharpe, B. S. Afr. pp. 184, 812; Hargitt, Cat. xviii. p. 101.

No. 64, ♀ juv. Zomba, Sept. 1. This is the first example of the present species recorded from north of the Zambesi. It is a young bird, very difficult to determine, but Mr. Hargitt thinks that it must belong to *C. smithii*.

35. Campothera malherbii.

Campothera malherbii, Hargitt, Cat. xviii. p. 96.

No. 65, ♂ ad. Zomba, Sept. 3. Also recorded for the first time from so far south.

36. DENDROPICUS ZANZIBARI.

Dendropicus zanzibari, Hargitt, Cat. xviii. p. 297.

No. 66. Zomba, Aug. 25. This is an immature bird. It is the first example of the present species recorded from a district so far south on the East Coast.

37. PŒOCEPHALUS ROBUSTUS.

Psittacus robustus, Sharpe, B. S. Afr. p. 194.

Pœocephalus robustus, Salvad. Cat. xx. p. 363.

Nos. 21, 98, ♀ ad. Zomba, Sept.

38. PŒOCEPHALUS FUSCICAPILLUS.

Psittacus fuscicapillus, Sharpe, B. S. Afr. p. 197.

Pœocephalus fuscicapillus, Salvad. Cat. xx. p. 368.

Nos. 20, 97, ♂ ♀ ad. Zomba, Aug., Sept., and December.

39. TURDUS MILANJENSIS, sp. n.

T. similis *T. olivaceo*, sed saturatior; gutture valdè nigro striato, et hypochondriis saturatè olivaceo-griseis cum pectore concoloribus, minimè aurantiacis, distinguendus. Long. tot. 8·5 poll., alæ 4·7.

No. 15. Milanji Plateau, 6000 feet, Oct. 25 and 27, Nov. 1. Mr. Whyte has sent home seven fine specimens of this species, with a note that it is the "Common Thrush of the Milanji Plateau, and has a sweet song."

Similar to *T. olivaceus*, but with the throat rather more strongly striped with black; crop, sides of the body, and outside of the thighs olive-brown; centre of the breast orange-chestnut; under tail-coverts olive-brown with broad white shaft-patches; under wing-coverts and inner margins of the quills orange. Total length 8·5 inches, culmen 1, wing 4·7, tail 4·2, tarsus 1·15.

40. TURDUS LIBONYANUS.

Turdus libonyanus, Smith; Sharpe, B. S. Afr. pp. 199, 813; Seebohm, Cat. v. p. 229.

No. 31. Zomba, Aug. and Sept. This is the most northern locality yet known for both this and the next species.

45. Cossypha natalensis.

Cossypha natalensis, Sharpe, B. S. Afr. p. 223; id. Cat. vii. p. 37.

No. 26. Milanji Plateau, Dec.

46. Cossypha caffra.

Cossypha caffra, Sharpe, B. S. Afr. pp. 224, 816; id. Cat. vii. p. 39.

No. 24, Milanji Plateau, 6000 feet, Nov. 17. These specimens belong to the slightly darker race which is found on Kilimanjaro.

47. Cossypha heuglini.

Cossypha heuglini, Sharpe, B. S. Afr. pp. 227, 817; id. Cat. vii. p. 41.

Nos. 44, 63, 26. Zomba, Aug. and Sept; Milanji, Dec.

48. Callene anomala, sp. n.

C. olivaceo-brunnea: supracaudalibus et caudâ rufescentibus: pileo paullo saturatiore: fascia superciliari anticè albidâ, posticè cinereâ: gutture conspicuè albo: pectore cinereo: abdomine albo: subcaudalibus aurantiacis: hypochondriis et subalaribus olivaceis. Long. tot. 6·5 poll., alæ 3·15.

No. 4. Milanji Plateau, 6000 feet, November. Three specimens.

Forehead, sides of the crown, cheeks, and lores grey, darker in front of the eye; the broad grey eyebrow inclines to white in front; ear-coverts, sides of the neck, and upper parts generally uniform brown, with a rufous shade on the back, passing into bright chestnut on the upper tail-coverts; wings dark brown, with the lesser coverts grey and with the edges of the other feathers washed with olive-shaded brown like the mantle; tail brown, with a slight rufous shade, strongest on the edges of the feathers; throat white; crop and centre of the breast pale grey, passing into white on the abdomen; sides of the body olive-brown; thighs leaden grey; axillaries and inner under wing-coverts like the sides of the breast; outer wing-coverts leaden grey; quills uniform silky brown; bill black; legs brown. Total length 6·5 inches, culmen 0·6, wing 3·15, tail 2·5, tarsus 1·25.

This species is quite distinct in coloration from all its allies.

49. Pratincola torquata.

Pratincola torquata, Sharpe, B. S. Afr. pp. 250, 820; id. Cat. iv. p. 190.

Nos. 55, 27. Zomba, Sept.; Milanji, 6000 feet, Nov. and Dec. Five specimens in various plumages.

50. Erythropygia zambesiana.

Erythropygia zambesiana, Sharpe, B. S. Afr. p. 821; id. Cat. vii. p. 78, pl. 15. fig. 1.

No. 48. Zomba, Jan., adult and young.

This is a local form of *E. ruficauda*; the type came from Tete on the south bank of the Zambesi. The specimens do not quite agree with the Tete specimen, being so much darker; but the latter bird is in freshly moulted plumage, whereas the Zomba examples are worn and evidently in breeding dress.

51. Prinia mystacea.

Drymœca affinis, Sharpe, B. S. Afr. pp. 258, 822.

Prinia mystacea, Sharpe, Cat. vii. p. 191.

No. 100. Zomba, Jan.

52. Cisticola cinerascens.

Cisticola cinerascens (Heugl.); Sharpe, Cat. vii. p. 248.

No. 71, ♀. Zomba, Sept. This is the first time this species has been recorded further south than Dar-es-Salaam.

53. Cisticola subruficapilla.

Cisticola subruficapilla (Smith); Sharpe, B. S. Afr. p. 266; id. Cat. vii. p. 283.

No. 70. Milanji Plateau, Aug. and Nov.

54. Cisticola orientalis.

Melocichla mentalis (nec Fras.), Shelley, P. Z. S. 1881, p. 572.

Cisticola orientalis, Sharpe, Cat. vii. p. 245.

No. 73, ♂. Zomba, Febr. This specimen agrees well with one from the Usambara country, but has the upper parts slightly paler than in specimens of *C. mentalis* from the Gold Coast.

55. **Apalis flavigularis**, sp. n.

A. similis *A. thoracicæ*, sed pileo nigricante, gutture et abdomine lætè flavis, et torque præpectorali nigro distinguenda. Long. tot. 5 poll., alæ 2·05.

No. 23. Milanji Plateau, Oct.

Similar to *A. thoracica*, but darker and brighter. Upper parts olive-green, shading into dusky black on the crown; quills dark brown, edged with olive-green; tail grey, with the terminal portions of the outer three pairs of feathers white; sides of the head and a broad prepectoral band black; cheeks, throat, and centre of breast bright yellow, passing into olive-green on the sides of the body; thighs dusky olive; under wing-coverts and inner margins of the quills white, the former shaded with yellow. Total length 5 inches, culmen 0·55, wing 2·05, tail 1·9, tarsus 0·85.

In one of these specimens, probably a younger bird, the back of the neck and crown are olive like the back, and only shaded into black on the forehead; and the black prepectoral collar is much narrower, as narrow, in fact, as in *A. thoracica*.

56. **Bradypterus nyassæ**, sp. n.

B. similis *B. cinnamomeo*, sed saturatior, potius castaneobrunneus: hypochondriis fulvescenti-brunneis, nec aurantiaco-brunneis. Long. tot. 6 poll., alæ 2·35.

Similar to *B. cinnamomeus*, but much darker and more chestnut-brown, the sides of the body not orange, but sandy brown. Total length 6 inches, wing 2·35.

Milanji Plateau, 6000 feet, Oct.

57. **Eremomela scotops.**

Eremomela scotops, Sund.; Sharpe, B. S. Afr. pp. 299, 828; id. Cat. vii. p. 162, pl. 5. fig. 1.

No. 72. Zomba. This species has never before been recorded from north of the Zambesi.

58. **Cinnyris falkensteini.**

Cinnyris falkensteini, Reichen.; Sharpe, Ibis, 1891, p. 594.

No. 69, ♂. Zomba, Aug.; also an unlabelled female or young bird. This is the first time this species has been met with so far south; it ranges throughout East Africa north to the Uganda country.

59. Cinnyris cupreus.

Cinnyris cupreus, Shelley, Monogr. Nect. p. 191, pl. 58.

No. 52. Zomba, Jan. The collection contains two males, one in full plumage. This agrees perfectly in colouring and measurements with a specimen from Senegambia, showing that there are no constant characters to indicate local races.

60. Chalcomitra gutturalis.

Cinnyris gutturalis, Sharpe, B. S. Afr. pp. 311, 830; Shelley, Monogr. Nect. p. 261, pl. 81.

Nos. 70, 91. Zomba, Sept. and Jan.; Milanji Plains, 4000 feet, Oct.

61. Anthothreptes longuemarii.

Anthreptes longuemarii, Shelley, Monogr. Nect. p. 335, pl. 108.

Anthothreptes orientalis, Reichen. J. f. O. 1889, p. 285.

No. 61. Zomba, Febr. This is the first time this species has been obtained so far south.

62. Parus xanthostomus.

Parus xanthostomus, Bull. B. O. C. no. ii. p. vi.

P. similis *P. nigro*, sed remigibus flavo marginatis et ore intus flavo distinguendus. Long. tot. 6 poll., alæ 3·15.

No. 87. Mpimbi, Upper Shiré, Feb. 11.

Similar to *P. niger*, but differs in the upper parts being dusky black with a green instead of a blue gloss on the crown; wings with the base of the median coverts black and the edges of the quills shaded with olive-yellow; throat and under surface of the body ashy grey; bill black, with the inside of the mouth bright yellow; legs olive, shaded grey. Total length 6 inches, culmen 0·45, wing 3·15, tail 2·7, tarsus 0·75.

This species is also known to me from two other specimens. One of these is a very fine one in my own collection, procured by Dr. Bradshaw south of the Zambesi, from which I have taken the description. The other is in the British Museum, labelled "Graham's Town (*Atmore*)."

63. Pogonocichla johnstoni, sp. n.

P. similis *P. stellatæ*, sed secundariis olivaceo marginatis, minimè cinereis, distinguenda. Long. tot. 5·8 poll., alæ 3·15.

No. 3. Milanji Plateau, Nov.

Similar to *P. stellata*, but easily distinguished by the olive margins to the secondaries. Total length 5·3 inches, wing 3·15.

64. Platystira peltata.

Platystira peltata, Sharpe, B. S. Afr. p. 345; id. Cat. iv. p. 147.

♀ ad. Milanji, Dec.

65. Pachyprora molitor.

Batis molitor, Sharpe, B. S. Afr. pp. 318, 838, pl. 10. fig. 1; id. Cat. iv. p. 137.

Nos. 54, 67. Zomba, Sept. and Febr.

66. Pachyprora dimorpha, sp. n.

P. similis *P. mixtæ*, sed caudâ valdè longiore (1·75), et maris maculâ albâ nuchali nullâ, necnon feminæ lineâ albâ superciliari obsoletâ et plagâ gutturali et hypochondriis aurantiaco-castaneis, distinguenda.

Similar to *P. mixta*, but with a longer tail, the male distinguished by the absence of the white nuchal spot, and the female by the obsolete white eyebrow and by the orange-chestnut throat-patch and flanks.

Nos. 1 and 6. Milanji Plateau, Oct. and Nov.

This species resembles *P. mixta*, which was discovered by Mr. Hunter on Mount Kilimanjaro in August, at from 6000 to 7000 feet. It is at once distinguished by its longer tail (1·75 instead of 1·4). The males differ in having a broader pectoral band and no white nuchal spot. The females differ in having the chestnut of the underparts much darker, the throat-patch being separated from the darker prepectoral band by a distinct whitish patch.

67. Terpsiphone perspicillata.

Terpsiphone cristata, Sharpe, B. S. Afr. pp. 352, 838.

Terpsiphone perspicillata, Sharpe, Cat. iv. p. 357.

Nos. 35, 7. Zomba, Sept., Dec., Jan., and Febr. Five specimens.

68. TROCHOCERCUS ALBONOTATUS.

Trochocercus albonotatus, Sharpe, Ibis, 1891, p. 121; 1892, p. 303, pl. 7. fig. 1.

No. 8. Milanji Plateau, 6000 feet, Oct.

This is an instance of an East-African species of Flycatcher ranging into the Zambesi district. The original type was procured by Mr. Jackson on Mount Elgon, and the Milanji specimens cannot be specifically separated, though the grey on the chest is somewhat lighter and contrasts a little more with the black throat.

69. HIRUNDO ASTIGMA, sp. n.

Similis *H. semirufæ*, sed plagâ auriculari rufâ et caudâ minimè albo maculatâ distinguenda. Long. tot. 7·5 poll., alæ 4·9.

No. 13. Milanji Plateau, 6000 feet, Oct.

Similar to *H. semirufa*, but differs in having the ear-coverts and sides of the head, behind the eye, chestnut, which colour partially extends across the nape; no trace of white on the tail; underparts paler, throat nearly white; under tail-coverts with more than the terminal half bluish black. Total length 7·5 inches, culmen 0·4, wing 4·9, tail 4·1, tarsus 0·6.

70. HIRUNDO PUELLA.

Hirundo puella, Sharpe, B. S. Afr. pp. 373, 841; id. Cat. x. p. 154.

No. 29. Milanji Plateau, 4000 feet, Oct.

71. LANIUS COLLARIS.

Lanius collaris, Sharpe, B. S. Afr. pp. 374, 841; Gadow, Cat. viii. p. 255.

Nos. 34, 41, 68. Zomba, Aug. and Sept. These specimens agree perfectly with others from Natal. I do not find the species previously recorded from the Zambesi district.

72. ENNEOCTONUS COLLURIO.

Enneoctonus collurio, Sharpe, B. S. Afr. pp. 378, 842.

Lanius collurio, Gadow, Cat. viii. p. 286.

No. 69. Zomba, Febr.

73. LANIARIUS SULPHUREIPECTUS.

Laniarius sulphureipectus, Sharpe, B. S. Afr. p. 384; Gadow, Cat. viii. p. 159.

No. 51. Zomba, Febr.; Milanji Plains, Oct. and Dec.

74. DRYOSCOPUS CUBLA.

Laniarius cubla, Sharpe, B. S. Afr. pp. 392, 842; Gadow, Cat. viii. p. 148.

Nos. 37, 64. Zomba, Aug., Sept., and Febr.; Milanji Plains, Dec.

75. DRYOSCOPUS STICTURUS.

Laniarius sticturus (Hartl. & Finsch); Sharpe, B. S. Afr. pp. 393, 843.

Dryoscopus sticturus, Gadow, Cat. viii. p. 136.

Nos. 36, 67. Zomba, Aug. and Sept.

76. TELEPHONUS SENEGALUS.

Laniarius senegalus (L.); Sharpe, B. S. Afr. pp. 394, 843.

Telephonus senegalus, Gadow, Cat. viii. p. 124.

Nos. 61, 56. Zomba, Sept. and Febr.; Milanji Plains, Oct.

77. TELEPHONUS ANCHIETÆ.

Telephonus anchietæ, Bocage, Orn. Angola, p. 225, pl. 4; Shelley, P. Z. S. 1881, p. 579; Gadow, Cat. viii. p. 129.

No. 30. Milanji Plain, 4000 feet, Oct. This species was previously known only from the Loango coast of Angola, and from Lamu on the East Coast.

78. NILAUS CAPENSIS.

Nilaus brubru, Sharpe, B. S. Afr. pp. 397, 843.

Nilaus capensis, Gadow, Cat. viii. p. 168, pl. 5. fig. 1.

No. 58. Zomba, Febr. (immature).

79. CAMPOPHAGA NIGRA.

Campophaga nigra, Sharpe, B. S. Afr. pp. 398, 843; id. Cat iv. p. 62.

Nos. 75, 66, ♂ ♀. Zomba, Sept. and Dec.

80. Campophaga hartlaubi.

Campophaga hartlaubi, Sharpe, B. S. Afr. p. 398; id. Cat. iv. p. 62.

No. 55, ♂. Zomba, Jan. This is the first record of the occurrence of this species north of the Zambesi.

81. Graucalus pectoralis.

Graucalus pectoralis, Sharpe, B. S. Afr. p. 843; id. Cat. iv. p. 29.

Nos. 11, 103. Zomba, Sept. Four examples. This species has never been procured before in the Zambesi district.

82. Bradyornis pallidus.

Bradyornis pallidus, Sharpe, Cat. iii. p. 310; Reichen. J. f. O. 1889, p. 277.

Nos. 49, 74. Zomba, Jan. 21 (nestling), Febr. The last specimen agrees perfectly with the type of my *B. modestus* from the Gold Coast. This is the most southern known limit for the species, which was likewise obtained by Dr. Stuhlmann at Quilimane.

83. Bradyornis ater.

Bradyornis ater, Sund.; Sharpe, B. S. Afr. p. 405; id. Cat. iii. p. 314.

Nos. 55, 71. Zomba, Jan. One of these specimens and an unlabelled one are young birds in spotted plumage, the black being spotted with chestnut-buff.

84. Prionops talacoma.

Prionops talacoma, Smith; Sharpe, B. S. Afr. pp. 406, 844; id. Cat. iii. p. 321.

No. 38. Zomba, Sept.

85. Sigmodus tricolor.

Sigmodus tricolor (Gray), Sharpe, B. S. Afr. p. 407; id. Cat. iii. p. 325.

Sigmodus graculinus, Sharpe, Cat. iii. p. 325.

Nos. 27, 33, 62, 63, 72. Zomba, Sept. and Febr.

86. Buchanga assimilis.

Buchanga assimilis, Sharpe, B. S. Afr. pp. 408, 844; id. Cat. iii. p. 247.

Nos. 53, 59. Zomba, Sept. (ad.), Febr. (jr.).

87. Oriolus larvatus.

Oriolus larvatus, Sharpe, B. S. Afr. pp. 413, 845; id. Cat. iii. p. 217.

Nos. 16, 46. Zomba, Aug., Sept., and Jan.; Milanji Plains, 4000 feet, Oct.

The series collected by Mr. Whyte shows great variation in the colour of the wing-coverts, which are grey in some specimens, in others yellow, and in others grey washed with yellow. The characters for the separation of this species and *Oriolus brachyrhynchus*, given by Dr. Sharpe in the 'Catalogue,' seem to me to require further examination.

88. Corvultur albicollis.

Corvultur albicollis, Sharpe, B. S. Afr. p. 417; id. Cat. iii. p. 24.

Nos. 3, 25. Zomba, Sept. and Oct.; Milanji Plateau, 6000 feet, Nov.

89. Lamprocolius sycobius.

Lamprocolius sycobius, Sharpe, B. S. Afr. pp. 426, 846; id. Cat. xiii. p. 178.

No. 40. Zomba, Sept.

90. Pholidauges verreauxi.

Pholidauges verreauxi, Sharpe, B. S. Afr. pp. 428, 846; id. Cat. xiii. p. 123.

Nos. 28, 50, 104. Zomba, Aug., Sept., Jan., and Febr.

91. Amydrus morio.

Amydrus morio (L.), Sharpe, B. S. Afr. pp. 431, 846; id. Cat. xiii. p. 161.

No. 18. ♂ ♀, Aug. and Sept.

92. Sycobrotus stictifrons.

Sycobrotus bicolor, Sharpe, B. S. Afr. p. 432 (pt., "Livingstone Expedition").

Sycobrotus stictifrons (Fischer & Reichen.), Sharpe, Cat. xiii. p. 424.

Symplectes stictifrons, Reichen. J. f. O. 1889, p. 281 (Quilimane).

No. 65. Zomba, Jan.; Milanji Plateau, 4000 feet, Oct.

[illegible] nearly similar in plumage,
[illegible] brown and two yellow.

[illegible] p. 125.

[illegible] Afr. p. [illegible]; id. Cat.

[illegible] S. Afr. [illegible]; id. Cat.

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and Nov. The four specimens are nearly similar in plumage, but two of them have the throat brown and two yellow, probably a sexual difference.

93. SITAGRA OCULARIA.

Hyphantornis ocularius (Smith), Sharpe, B. S. Afr. p. 435.

Sitagra ocularia, Sharpe, Cat. xiii. p. 427.

No. 42, ♂. Zomba, Febr.

94. HYPHANTORNIS NIGRICEPS.

Hyphantornis nigriceps, Sharpe, B. S. Afr. p. 436; id. Cat. p. 456.

No. 57, ♂. Zomba, Jan.

95. HYPHANTORNIS XANTHOPS.

Hyphantornis xanthops, Sharpe, B. S. Afr. p. 438; id. Cat. xiii. p. 447.

Nos. 56, 39, 41, 47. Zomba, Aug., Sept., and Febr.; Milanji Plains, 4000 feet, Dec.

I doubt whether, in the face of the series now sent by Mr. Whyte, Dr. Sharpe's *H. jamesoni* can be maintained as distinct from *H. xanthops.*

96. HYPHANTORNIS BERTRANDI, sp. n. (Plate II.)

H. similis *H. heuglini,* sed major, et fasciâ nuchali transversâ nigrâ distinguendus. Long. tot. 6·3 poll., alæ 3·3.

Nos. 41, 47. Zomba, Aug. and Sept.; Milanji Plains, 4000 feet, Oct.

Crown rufous, shaded yellow; nape, entire sides of the head, and the upper half of the throat black, followed by golden yellow, which extends almost across the hind neck; remainder of the upper parts uniform olive-yellow, with slight indications of brown shafts to the feathers of the mantle; median and greater wing-coverts and the quills dark brown, broadly edged with bright olive-yellow; remainder of the underparts rich golden yellow, with a very faint rufous shade on the middle of the throat; under wing-coverts, shafts, and inner margins of the quills bright yellow, with the remainder of the quills ashy brown; bill black; legs and claws pale brown. Total length 6·3 inches, culmen 0·85, wing 3·8, tail 2·6, tarsus 1.

A second specimen (Oct. 16th) is similar, only it has a few black feathers intermixed with the yellow of the crown.

A third specimen (Sept. 26th) is a young male, with a pale-coloured lower mandible, crown and sides of head olive-green; chin and upper throat yellow, these parts slightly mottled with black. From the form of the bill, measurements, and general appearance, it is evidently a young bird of this species.

I propose to name this species after Capt. Bertram Lutley Sclater, R.E., Mr. Johnston's principal officer in Nyassaland, and Commander of his police force.

97. HYPHANTORNIS CABANISI.

Hyphantornis cabanisi, Sharpe, B. S. Afr. p. 443; id. Cat. xiii. p. 461.

No. 18, ♀. Mpimbi, Febr. This species extends from Damaraland and Natal northwards to Lamu.

98. HYPHANTORNIS XANTHOPTERUS.

Hyphantornis xanthopterus, Sharpe, B. S. Afr. p. 443; id. Cat. xiii. p. 444, pl. 13. fig. 2.

Ploceus xanthopterus, Reichen. J. f. O. 1889, p. 281.

No. 81. Mpimbi, Febr. This species appears to be very local, as it is known only from the Shiré Valley and Quilimane.

99. ANAPLECTES RUBRICEPS.

Malimbus rubriceps, Sharpe, B. S. Afr. pp. 444, 847.

Anaplectes rubriceps, Sharpe, Cat. xiii. p. 411; Reichen. J. f. O. 1889, p. 281.

Nos. 50, 85. Zomba, Sept. and Dec.; Mpimbi, Febr.

100. PLOCEIPASSER PECTORALIS.

Ploceipasser pectoralis (Peters), Sharpe, Cat. xiii. p. 247.

No. 83. Mpimbi, Febr. Previously this species was known only from the type from Inhambani, and from specimens collected by Sir J. Kirk at Tete, on the south bank of the Zambesi. The young bird has the back and edges to the secondaries more rufous than in the adult.

101. AMBLYOSPIZA ALBIFRONS.

Amblyospiza albifrons, Sharpe, B. S. Afr. p. 449; id. Cat. xiii. p. 501.

No. 23. Zomba, Aug. and Sept. This is the first instance of this species being found to the north of the Zambesi.

102. VIDUA PRINCIPALIS.

Vidua principalis, Sharpe, B. S. Afr. pp. 453, 848; id. Cat. xiii. p. 203.

No. 37. Zomba, Jan. and Febr.; Milanji Plains, 4000 feet, Nov.

103. HYPOCHERA NIGERRIMA, Sharpe.

Hypochera ultramarina, Sharpe, B. S. Afr. p. 457 (part).

Hypochera nigerrima, Sharpe, Cat. xiii. p. 311.

No. 99. Zomba, Dec.

104. PENTHETRIA ARDENS (Bodd.).

Vidua ardens, Sharpe, B. S. Afr. pp. 455, 847.

Penthetria ardens, Sharpe, Cat. xiii. p. 215.

Nos. 45, 47, 80. Zomba, Sept. and Jan.; Milanji Plains, Oct.; Mpimbi, Febr.

105. PENTHETRIA ALBONOTATA (Cass.).

Penthetria albonotata, Sharpe, B. S. Afr. p. 460; id. Cat. xiii. p. 219.

No. 80. Mpimbi, Febr.

106. PYROMELANA FLAMMICEPS.

Pyromelana flammiceps, Sharpe, Cat. xiii. p. 228; Reichen. J. f. O. 1889, p. 282.

No. 95. Zomba, Jan. Altogether eight full-plumaged specimens are in the collection. This is the furthest locality south known for the present species.

107. PYROMELANA NIGRIFRONS.

Pyromelana nigrifrons, Sharpe, Cat. xiii. p. 233.

No. 82. Mpimbi, Febr. This is the first time the present species has been procured so far south.

108. PYROMELANA XANTHOMELÆNA.

Pyromelana xanthomelæna, Sharpe, Cat. xiii. p. 239.

No. 45. Zomba, Jan.; Milanji Plain, 4000 feet, Oct. This species may be distinguished from its allies south of the Zambesi (*P. minor* and *P. capensis*) by its black thighs.

109. PYTELIA AFRA (Gm.).

Pytelia afra, Sharpe, Cat. xiii. p. 302.

No. 40. Zomba, Jan. and Febr. This is the most southern locality for this species yet registered.

110. CRYPTOSPIZA REICHENOWI (Hartl.).

Pytelia reichenowi, Reichen. J. f. O. 1875, p. 41, pl. 2. fig. 1.

Cryptospiza reichenowi, Sharpe, Cat. xiii. p. 254 (Camaroon Mountains).

No. 10. Milanji Plateau, Nov. This specimen is not in full plumage, and it is difficult to determine it with certainty, but its measurements agree well with the type of *C. reichenowi*. Total length 4·2 inches, culmen 0·45, wing 2·1, tail 1·7, tarsus 0·7.

111. COCCOPYGIA DUFRESNII (V.).

Estrelda dufresnei, Sharpe, B. S. Afr. pp. 469, 849.

Coccopygia dufresnii, Sharpe, Cat. xiii. p. 305.

No. 11. Milanji Plateau, Nov. This is the most northern known locality for the present species.

112. ESTRILDA MINOR.

Estrilda minor, Sharpe, Cat. xiii. p. 393.

No. 63. Zomba, Febr.; Milanji Plains, 4000 feet, Oct. South of the Zambesi this form is replaced by typical *E. astrild*.

113. ESTRILDA ANGOLENSIS (L.).

Uræginthus cyanogaster, Sharpe, B. S. Afr. pp. 473, 850.

Estrilda angolensis, Sharpe, Cat. xiii. p. 402.

No. 86. Mpimbi, Febr.

114. LAGONOSTICTA RHODOPARIA.

Lagonosticta rhodoparia, Sharpe, Cat. xiii. p. 282.

No. 60. Zomba, Febr. This is the southernmost locality known for this species, which ranges along the east coast to Bogos-land in N.E. Africa.

115. LAGONOSTICTA NIVEIGUTTATA (Peters).

Hypargus niveiguttatus, Shelley, P. Z. S. 1881, p. 558, pl. 52. fig. 2; Sharpe, B. S. Afr. p. 477.

Lagonosticta niveiguttata, Sharpe, Cat. xiii. p. 274.

Nos. 59 and 57. Zomba, Sept.; Milanji Plateau, 6000 feet, Oct. and Nov.

116. PETRONIA PETRONELLA.

Petronia petronella, Sharpe, B. S. Afr. pp. 481, 850; id Cat. xii. p. 297.

No. 62. Zomba, Febr.

117. EMBERIZA FLAVIVENTRIS.

Fringillaria flaviventris, Sharpe, B. S. Afr. pp. 491, 851.

Emberiza flaviventris, Sharpe, Cat. xii. p. 499.

No. 38. Zomba, Jan. and Febr.

118. EMBERIZA ORIENTALIS (Shelley).

Fringillaria orientalis, Shelley, P. Z. S. 1882, p. 308.

Emberiza orientalis, Sharpe, Cat. xii. p. 502.

Nos. 48, 38. Zomba, Aug., Sept., and Jan. This is the most southern known locality for the present species.

119. MACRONYX CROCEUS.

Macronyx striolatus, Sharpe, B. S. Afr. p. 532.

Macronyx croceus, Sharpe, Cat. x. p. 626.

No. 26. Zomba, Dec. and Jan.

120. ANTHUS RUFULUS.

Anthus caffer, Sharpe, B. S. Afr. pp. 534, 852.

Anthus rufulus, Sharpe, Cat. x. p. 574.

No. 2. Milanji Plateau, 6000 feet, Oct.

121. MOTACILLA LONGICAUDA, Rüpp.

Motacilla longicauda, Sharpe, B. S. Afr. p. 544; id. Cat. x. p. 495.

No. 77. Zomba, Sept.

122. TRERON DELALANDII.

Treron delalandii, Shelley, Ibis, 1883, p. 270; Sharpe, B. S. Afr. p. 558.

No. 10. Zomba, Aug.

123. PALUMBUS ARQUATRIX.

Palumbus arquatrix, Shelley, Ibis, 1883, p. 283; Sharpe, B. S. Afr. p. 561.

No. 4. Zomba, Sept.

124. HAPLOPELIA JOHNSTONI, sp. n. (Plate III.)

H. similis *H. larvatæ*, sed suprà lætior, subtùs valdè saturatior: notæo vinaceo-rubro conspicuè adumbrato. Long. tot. 11 poll., alæ 6·1.

No. 20. Milanji Plateau, 6000 feet, Oct.; two young and one adult.

Similar to *H. larvata*, but brighter; and differs in having a rich vinous gloss on the wings, back, upper tail-coverts, and centre tail-feathers; under surface of the body and under tail-coverts slightly darker; sides of the body and the entire under surface of the wings greyer; bill blackish; legs bright red. Total length 11 inches, culmen 0·7, wing 6·1, tail 4·3, tarsus 1·1.

This is a handsome species, closely allied to *H. larvata*. I propose to name it after Mr. H. H. Johnston, C.B., F.Z.S., to whose scientific zeal and energy we are indebted for our first knowledge of the birds of the high interior of Nyassaland.

125. TURTUR SEMITORQUATUS.

Turtur semitorquatus, Shelley, Ibis, 1883, p. 303; Sharpe, B. S. Afr. p. 566.

No. 5. Zomba, Aug. and Sept.

126. TURTUR CAPICOLA.

Turtur capicola, Shelley, Ibis, 1883, p. 312; Sharpe, B. S. Afr. p. 567.

No. 6. Zomba, Sept.

No. [illegible]. [illegible], -

127. **TYMPANISTRIA TYMPANISTRIA.**

Tympanistria tympanistria, Shelley, Ibis, 1883, p. 326; Sharpe, B. S. Afr. p. 571.

No. 7. Zomba, Aug.

128. **PTERNISTES HUMBOLDTI.**

Pternistes humboldti, Sharpe, B. S. Afr. p. 589; Shelley, P. Z. S. 1889, p. 370; Grant, Ann. & Mag. Nat. Hist. ser. 6, vii. p. 145.

No. 32. Zomba, Jan.

129. **VANELLUS INORNATUS**, Swains.

Vanellus inornatus, Seeb. Geogr. Distr. Charadr. p. 225 (1888).

No. 84, ♂. Mpimbi, Feb. 28.

130. **CREX CREX** (L.).

Crex crex, Sharpe, B. S. Afr. p. 611.

No. 44. Zomba, Jan.

131. **LIMNOCORAX NIGER.**

Limnocorax niger, Sharpe, B. S. Afr. p. 618.

No. 79. Mpimbi, Upper Shiré, Febr. Two specimens, probably male and female, one being more blackish brown than the other.

132. **RHYNCHOPS FLAVIROSTRIS.**

Rhynchops flavirostris, Sharpe, B. S. Afr. p. 706.

No. 77. Mpimbi, Upper Shiré, Febr.

133. **BUBULCUS IBIS.**

Bubulcus ibis, Sharpe, B. S. Afr. p. 717.

No. 76. Mpimbi, Upper Shiré, Febr.

134. **NYCTICORAX GRISEUS.**

Nycticorax griseus (L.), Sharpe, B. S. Afr. p. 724.

No. 75. Mpimbi, Upper Shiré, Febr.

II.—*On the Osteology, Pterylosis, and Muscular Anatomy of the American Fin-foot* (Heliornis surinamensis). By FRANK E. BEDDARD, M.A., F.R.S., Prosector to the Zoological Society of London, Examiner in Biology to the Royal College of Surgeons.

THE Heliornithidæ, comprising the two genera *Heliornis* and *Podica*, have been investigated anatomically by Brandt*, Nitzsch†, Giebel‡, Gadow§, and myself‖. The affinities of these birds have been furthermore discussed by Fürbringer¶. The American Fin-foot, *Heliornis*, is at present less well known than the African form. Nitzsch has described its pterylosis, Giebel gave a few brief notes upon the muscular anatomy, while Gadow has investigated the intestinal coils. Having had the opportunity two years ago of examining and reporting upon the structure of the African Fin-foot, I am particularly glad to be able now to supplement that paper by some account of the American Fin-foot. The material upon which the present paper is based I owe immediately to the kindness of Mr. Sclater, and more indirectly to that of Mr. J. J. Quelch, the Superintendent of the Museum, George Town, British Guiana, who, at Mr. Sclater's request, obtained the specimens. The object of this paper is to compare the structure of the two genera *Heliornis* and *Podica* in those points as to which I was not able to make a comparison in my paper upon the anatomy of the latter. The comparisons now made chiefly concern the muscular anatomy. I have not attempted any further discussion upon the affinities of the Heliornithidæ to other families of birds. The facts which I have been able to make out with regard to *Heliornis* do not render necessary any modification of the opinions which I expressed in my paper upon *Podica senegalensis*. Such differences as exist in the anatomy of the two genera appear to me to be correlated with the smaller size of *Heliornis*. In many groups of the animal kingdom we find that the smaller members show a simplification of structure as compared with the larger forms.

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* "Einige Bemerkungen über *Podoa* und ihr Verhältniss zur *Fulica*, *Podiceps*, und den Steganopoden," forming section iii. of "Beiträge zur Naturgeschichte der Vögel" &c., Mém. Ac. St. Pétersbourg, sér. 6, t. iii. (1840).

† "Pterylography." Engl. transl. by P. L. Sclater. Ray Society. 1867.

‡ "Zur Naturgeschichte des Surinamischen Wasserhuhn's (*Podoa surinamensis*)," Zeitschr. ges. Naturw. Bd. xviii. (1861) p. 424.

§ "On the Taxonomic Value of the Intestinal Convolutions in Birds," P. Z. S. 1889, p. 303.

‖ "On the Anatomy of *Podica senegalensis*," P. Z. S. 1890, p. 425.

¶ "Untersuchungen zur Morphologie und Systematik der Vögel," p. 1020 *et seqq.*

I. *Pterylosis.*

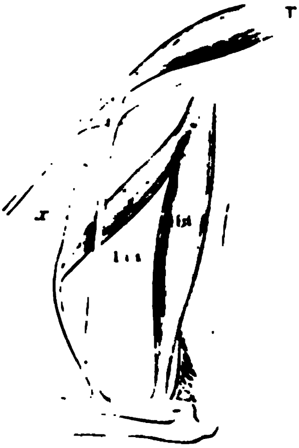
The pterylosis of this bird has been already described by Nitzsch (*op. cit.* p. 127, pl. viii. fig. 9). When the bird is plucked the feather-tracts are rendered rather inconspicuous by the presence of down feathers, which are scattered more or less uniformly all over the back, and which occur on the ventral surface of the body, particularly along the line of the sternal keel. I find that, as Nitzsch has stated, the neck is nearly continuously feathered, there being no lateral, and only a short ventral, bare tract. The dorsal tract is strong between the shoulder-blades and is distinctly forked; each branch of the fork is only two or three feathers wide; the hinder portion of the tracts is weak, but the feathering becomes strong soon after they have joined posteriorly; the junction of the two tracts occurs at the anterior end of the pelvis.

Nitzsch says nothing of the ventral tracts in his special description of *Heliornis*, but distinguishes the genera *Fulica*, *Heliornis*, and others by the undivided ventral tracts. This was certainly the arrangement in the specimens which I examined. The median ventral apterion extends about an inch up the neck.

II. *Muscular Anatomy.*

The *patagial muscle* is, as in *Podica senegalensis*, single; just before the origin of the two tendons into which it divides it receives a strong tendinous slip from the deltoid ridge of the humerus. There is another slip reinforcing the *longus* tendon. The tensor patagii brevis tendon is perfectly similar to that of the African Fin-foot; the biceps slip, however, instead of ending freely upon the patagium, as it does in that bird, joins the tendon of the tensor patagii brevis, which is also an unusual arrangement, it being, of course, more commonly attached to the tendon of the tensor patagii longus. The actual dispositions and connections of the several muscles and tendons, which are somewhat complicated, are shown in the accompanying drawing (fig. 1). The biceps slip passes, of course, below the tendon of the tensor patagii brevis; on the distal side of this tendon it ends in a tendon which runs down the patagium and is inserted on to the tensor patagii tendon just before its insertion. The tendon of the biceps slip is exceedingly fine, and not always, for this reason, visible; in one specimen it appeared to be inserted independently on to the fascia covering the muscles of the forearm; in another specimen the tendon of the biceps slip was bifurcate just at its end. Where the other tendon lettered *x* in the

Fig. 1.



Patagial muscles of *Heliornis surinamensis*. *T.p.*, tensor patagii. *Bi.*, biceps; *Bi.s.*, biceps slip; *x*, tendinous slip inserted on patagium (?).

drawing ended I am unable to say. Evidently, therefore, there are differences in respect of this muscle between the American and African Fin-foots.

In many birds, for instance in the Duck (see Fürbringer, *loc. cit.* Taf. xx. fig. 4), the biceps slip joins the tendon of the tensor patagii longus just at the insertion of the fan-shaped tendon which very commonly unites that tendon with the tendon of the patagii brevis at its insertion. I am inclined to think that the long and delicate tendon connected with the biceps slip of *Heliornis* is the equivalent of that tendon which has lost its attachment to the tendon of the tensor patagii longus; if so, then the tendons of the patagium of *Heliornis* are less abnormal than one would otherwise regard them.

Latissimus dorsi.—This muscle is composed of the usual two parts: the anterior portion is, also as usual, the weaker of the two; it arises from the spines of the dorsal vertebræ; the origin of the posterior half of the muscle follows immediately upon it; the posterior half of the latissimus dorsi arises also from the front border of the ilium. The anterior half of the muscle has a broad tendinous insertion, which commences just behind the short, flat, and narrow glistening tendon by which the posterior half of the muscle is attached to the humerus.

Anconæus longus.—This muscle appears to arise and to be inserted precisely as in *Podica senegalensis.* The accessory tendon, which is about one half the width of the tendon of insertion of the posterior half of the latissimus dorsi, is inserted on to the humerus above the latter.

Expansor secundariorum.—In the fact of the presence of this muscle the American Fin-foot agrees with the African form. The tendon is very thin, though strong; it increases somewhat in thickness as it approaches the teres.

Pectoralis primus.—I could not detect any division of this muscle into two layers, such as occurs in many birds, including *Podica senegalensis.*

The *pectoralis secundus* extends back in its origin nearly to the end of the sternum.

The *deltoid* is well developed; it is inserted on to rather more than the first half of the humerus.

The *biceps* arises by the usual long tendon from the scapula.

Both the *rhomboidei* have, as in *Podica senegalensis,* an aponeurotic origin from the vertebral column. The superficial rhomboideus is quite double the length of the deeper muscle, and overlaps it for nearly its whole length.

The *tensor fasciæ* is large; the anterior half of the muscle has a tendinous origin, the posterior half a muscular origin, which extends a long way behind the acetabulum.

The *biceps* is at its origin completely covered by the last muscle; indeed, the origin of the tensor fasciæ extends considerably beyond the point where the origin of the biceps leaves off; this muscle is comparatively slight, only 8 mm. in diameter at its origin, which is fleshy. The biceps has two insertions: one of these is like that found in nearly all other birds, *i. e.* it ends in a stout tendon, which passes through a tendinous loop, and is inserted on to the tibia; the second insertion is on to the fascia covering the gastrocnemius.

In describing the anatomy of *Podica senegalensis* I had occasion to point out* the very remarkable conformation of the biceps femoris in that bird, which has three separate insertions, and is more complicated than in any other bird of which the muscular structure is known. It will be observed that the biceps femoris of the American genus is like that of the African, with the only exception that it wants the third insertion present in the former. The condition of this muscle in the two genera of Heliornithidæ seems to show that the smaller American form has a more simplified structure when compared with its larger African relative. I point out later that the skull-characters show the same kind of reduction, which I cannot help associating with the size of the bird.

The *semitendinosus* and the *semimembranosus* may be considered together, for they form one continuous mass at their origin, of which the two constituent parts were indistin-

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* *Op. cit.* p. 429.

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terior half of the muscle

guishable in the individuals which I dissected; the origin of these two muscles commences exactly at that point where the origin of the tensor fasciæ leaves off. The insertion of the semimembranosus is flat and tendinous; it lies above the insertion of the semitendinosus, which is also flat and tendinous; the tendinous insertion of the semitendinosus is 9 mm. across; it nearly completely overlaps the 6 mm. wide insertion of the semimembranosus, when the thigh is examined from the inside.

In *Podica senegalensis* these two muscles are inserted one above the other, the insertions not overlapping at all, indeed not quite meeting.

As is the case with *Podica senegalensis, Heliornis surinamensis* has no *accessory semitendinosus.* It has, however, like the former bird, both the *femoro-caudal* and *accessory femoro-caudal.*

There are two *adductors* and, of course, an *ambiens.*

The *gastrocnemius* has a large outer and inner head; there is a very slender middle head; its tendon is ossified.

The *tibialis anticus* is partly covered over, as is frequently the case, by the *peronæus brevis.* It has a single insertion, and its tendon is ossified up to within 1 mm. of the ankle-joint. Both peroneal muscles are present.

The *peronæus brevis,* as has already been mentioned, partly covers over the tibialis anticus; its tendon of insertion is at first ossified; it is rather broad, and seems partly, at least, to join the tendon of the gastrocnemius at the insertion.

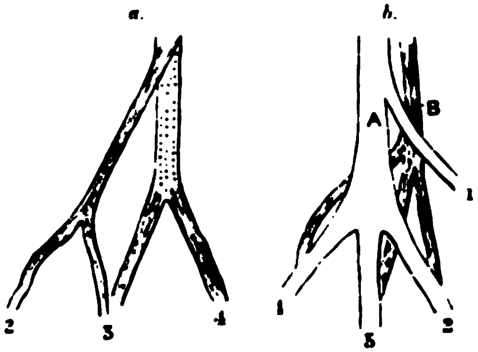
The *peronæus longus* is also covered by the *peroneus brevis*; it runs alongside of the *tibialis anticus*; its tendon is also ossified and is inserted in the usual way.

The tendon of the *extensor communis digitorum* (fig. 2, *a*, p. 36) has two separate ossifications, one just at its commencement, the other along the metatarsus; at the commencement of the second ossified tract a branch is given off, which supplies the second and third toes; at the end of the ossified tract the tendon divides into two for the third and fourth toes.

The superficial flexor tendons, which are, as usual, seven in number, are ossified.

The arrangement of the deep flexor tendons is illustrated in the accompanying drawing (fig. 2, *b*). It will be observed that each tendon splits into three, apart from the special branch to digit I given off from the flexor hallucis.

Fig. 2.



Heliornis surinamensis.—*a*. Tendon of extensor communis digitorum supplying second, third, and fourth digits (2, 3, 4). *b*. Deep flexor tendons: A. Flexor hallucis; B. Flexor communis. The slips going to the digits are numbered in accordance 1, 2, 3, 4. The ossified region of the tendon is indicated by dots.

III. *Visceral Anatomy.*

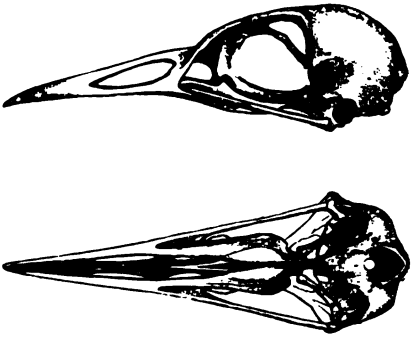
I do not think that it is necessary to give a detailed account of the alimentary tract of this bird. In the first place, the viscera were not in a very good condition for furnishing a careful report; they were softened by the action of the weak spirit in which they had been preserved, and were at the same time much adherent. In the second place, the main characteristics of the viscera are precisely as in *Podica*; in both genera the right liver-lobe is larger than the left, and there are a pair of moderately long cæca present.

In the syrinx the bronchidesmus is incomplete, there being a gap of about 2 mm. in length between the diverging bronchi. There are ten to twelve bronchial semirings on each side. The last three or four tracheal rings are partly fused (incompletely in front) to form a box. The single pair of intrinsic muscles is present.

IV. *Skull.*

The skull of *Heliornis* (fig. 3) differs but slightly, as I have already pointed out, from that of *Podica*. It is smaller, and the remaining differences may perhaps be accounted for by this: that is to say, the processes and fossæ from which muscles arise, or to which they are attached, are less strongly marked in the more slightly built *Heliornis*.

Fig. 3.

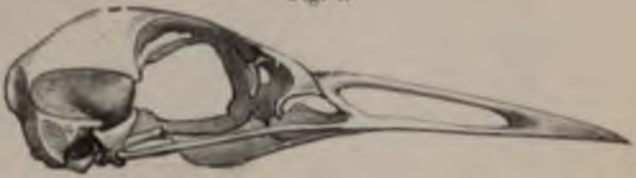


Skull of *Heliornis surinamensis*, nat. size.

Particularly is this the case with the temporal fossæ. In *Podica* (*cf.* fig. 4, p. 38) these fossæ, although not nearly so marked as in the Grebes, are fairly deep and extend back to the posterior face of the skull. In *Heliornis*, on the contrary (see fig. 3), the fossæ are slight; they only extend over half the lateral surface of the brain-case; furthermore, the two processes of the skull-wall (postfrontal and zygomatic) which limit, above and below, the commencement of the temporal fossæ are directly above and below each other respectively in *Heliornis*; in *Podica* the lower process, which corresponds to the zygomatic process of the squamosal in mammals, does not jut out so far forward as to lie beneath the superior process.

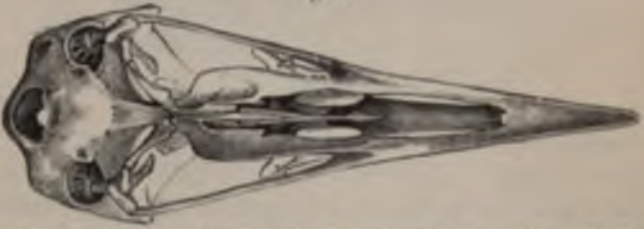
In my paper upon *Podica senegalensis* I drew attention to a point of difference between the Rails and the Grebes in the large size of the maxillo-palatines of the former. In such a Rail as *Ocydromus australis* the maxillo-palatines are comparatively large inflated bones, which, although covered, are not concealed by the narrow anterior part of the palatines which underlie them; in *Podiceps cornutus* the maxillo-palatines are much slighter and only just appear on the inner side of the palatines. *Podica senegalenis* (figs. 4 and 5) is more Rail-like than Grebe-like in this structural feature. On the other hand, the American Fin-foot is rather more Grebe-like than Rail-like. The maxillo-palatines are thin curved plates of bone, which are even less exposed than in *Podiceps cornutus* when the skull is viewed from below; this is owing to the fact that they are more curved, with the hollow surface directed outwards; in the Grebe these plates are nearly parallel with the long axis of the skull, the concave surface being directed downwards: in reality, therefore, the resemblance of the maxillo-palatines of *Heliornis* to those of the Rail is closer than to those of the Grebe; the outer plate of bone which would convert the thin scroll-like maxillo-palatines of *Heliornis* into the inflated maxillo-palatines of *Ocydromus* or of *Podica* is wanting. In the Grebe the form and direction of the maxillo-palatines are such that an additional

Fig. 4.



Skull of *Podica senegalensis*, lateral view; nat. size. (From P. Z. S. 1890, p. 433.)

Fig. 5.



Skull of *Podica senegalensis*, ventral view; nat. size. (From P. Z. S. 1890, p. 434.)

plate of bone could not convert them into the similitude of the inflated bullæ of the Rails.

Other smaller points of difference will be apparent from a comparison of the accompanying figures of the skulls of *Heliornis* and of *Podica**.

V. *Sternum.*

The sternum, as will be seen by the figures (6 and 7), does

Fig. 7.

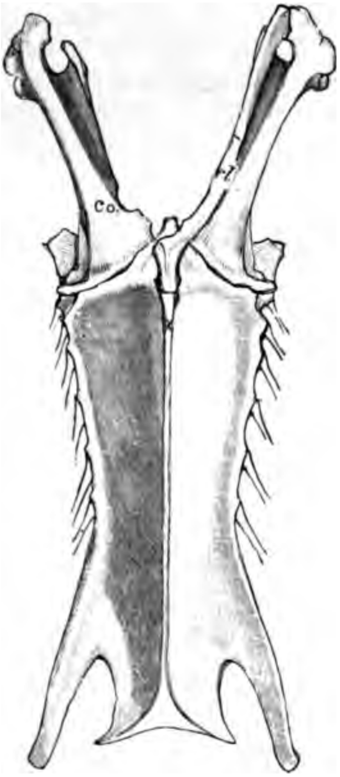


Fig. 6.

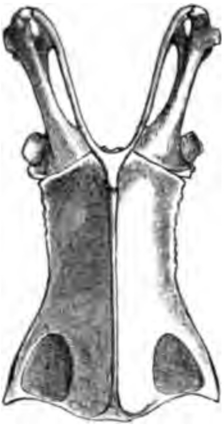


Fig. 6.—*Heliornis surinamensis.* Sternum, ventral view; nat. size.

Fig. 7.—Sternum of *Podica senegalensis*, ventral view; nat. size. *Co.*, coracoid; *cl.*, clavicle (removed on right side). (From P. Z. S. 1890, p. 435.)

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* For the use of the figures of *Podica* I am indebted to the kindness of the Publication Committee of the Zoological Society.

not widely differ from that of *Podica*; the lateral margins are more concave, since the lateral processes jut out at a larger angle with the median axis. These processes, moreover, do not extend beyond the posterior margin of the sternum. The sternum also is shorter in proportion to its length in the American than in the African Fin-foot.

The measurements of the sternum of *Heliornis* are as follows:—Length 35 mm.; least breadth 16 mm.

With these measurements may be compared those of *Podica*:—Length 68 mm.; least breadth 20 mm.

The median interclavicular piece of the merrythought is not prolonged forwards, as it is in *Podica*.

VI. *Pelvis*.

There are hardly any points of difference between the pelvis of *Heliornis* and *Podica*. All the characteristic features of this part of the skeleton as described in *Podica* exist in *Heliornis*. The ridges on the ischia are, however, less conspicuous in the American Fin-foot.

I have already compared the *ribs* and *vertebræ* of these two birds, and need not recapitulate here what has been said in my paper in the P. Z. S. (*l. c.*).

III.—*On the Extinct Giant Birds of Argentina.*

By R. Lydekker.

For the last few years the palæontological world has been flooded with accounts of the wonderful discoveries of mammalian remains belonging to new or little known types which have been made in the Tertiary deposits of Argentina. These discoveries have rendered it certain that, instead of having to do merely with a single fauna of Pleistocene age, we have there laid before us a whole series of faunas, which evidently occupied a considerable portion of the Tertiary period. The geologists and palæontologists of Argentina are, indeed, of opinion that the deposits yielding vertebrate remains are equivalent to the whole of the European Tertiary series, from the Pleistocene to the Lower Eocene, inclusive. Personally, however, I have considerable doubts whether the inferior beds are really as old as the Lower Eocene, although they contain certain mammalian groups more or less closely allied to those of the European Eocene; but it must be admitted, in any case, that they occupy a position some considerable way down in the Tertiary series.

Now it is from these lowest beds that there have lately been brought to light the fine series of remains of giant extinct birds which have been described by Señores Ameghino, Mercerat, and Moreno in the memoirs cited below *. With that peculiarly unfortunate fatality which appears to be inseparable from vertebrate palæontology in Argentina, these fossil birds have, however, already become involved in a labyrinth of confusion and puzzling synonymy, comparable to that which renders the study of the fossil mammals of those regions so disheartening and repulsive to the European student.

The mischief began by the first of these remains being described by Professor Ameghino in 1887 as mammalian, under the uncouth name of *Phorusrhacos*; and it was not till 1891 that its describer found out that the presumed Edentate jaw was in reality part of an Avian mandible. In referring this jaw (which is figured, p. 42, reduced from the original given by Prof. Ameghino) to a bird, Prof. Ameghino took the opportunity of describing part of a cranium and some limb-bones belonging either to the same or a closely allied bird, also of amending the name to *Phororhacos* †; which term, it is quite evident, in spite of its uncouthness, is the one which must stand for the bird in question. Beyond the figure of the typical mandible, this memoir was unfortunately not illustrated, and the author made no attempt to determine the systematic position of the newly discovered bird.

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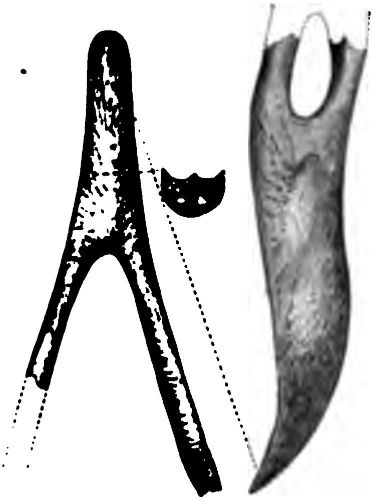
* Ameghino, C. "Aves fósiles Argentinas," *Revist. Argent. Hist. Nat.* vol. i. pp. 255–259 (1891).

——. "Enumeracion de las Aves fósiles de la República Argentina," *ibid.* pp. 441–453.

Moreno, F., and Mercerat, A. "Los Pájaros fósiles de la República Argentina," *An. Mus. La Plata*, vol. i., plates (1891).

† [We might suggest its further emendation to *Phororhacis*, its derivation being, we suppose, φορέω and ῥακὶς, a branch.—Ed.]



Lateral and inferior views of the front portion of the mandible of *Phororhacos longissimus*. ¼ nat. size.

The want of illustration in Prof. Ameghino's memoir was fully remedied by the folio work of Señores Moreno and Mercerat, which contains a large number of finely engraved plates fully illustrating the osteology of the limbs of these giant birds. The remains were referred by these authors to no less than nine distinct genera, under the names of *Phororhacos*, *Brontornis*, *Palæocironia*, *Mesembriornis*, *Stereornis*, *Patagornis*, *Dryornis*, *Darwinornis*, and *Rostrornis*. And here I may remark that the barbarism of such terms as *Darwinornis* and *Owenornis* is only paralleled by the bilingual origin of the name *Rostrornis*. The authors of this memoir arrived at the conclusion that these birds belong to a totally distinct primary group, of equal rank with the Ratitæ and Carinatæ, for which the name Stereornithes was suggested. No characters of sufficient importance to justify such a bold innovation were, however, given, the main feature upon which the authors appear to have relied being the absence of a pneumatic foramen in the femur.

Shortly after the appearance of this memoir—which must always bear a high value on account of the excellence of its illustrations—Prof. Ameghino published another paper criticizing and revising the work of Señores Moreno and Mercerat. The results of his investigations were to the effect that, while the genus *Brontornis* (with *Rostrornis* as a synonym) was entitled to stand, the whole of the other names proposed were merely synonyms of the original *Phororhacos*, of which six species were admitted. The author added, however, a third genus, which he named *Opisthodactylus*, distinguished by a peculiarity in the position of the facet for the hallux on the tarso-metatarsus. It may be added that, although Señores Moreno and Mercerat considered the birds described in their memoir to indicate no less than four distinct families, yet Prof. Ameghino included the whole of the three genera that he admitted in the single family *Phororhacidæ*, which was placed among the Ratitæ. Although we remember the lesson taught by the Moas as to the difficulty of separating generically well-marked avian forms upon the evidence of the limb-bones alone, yet, so far as we can judge from the materials at hand, Prof. Ameghino appears to have been perfectly justified in ruthlessly cutting down the genera of his *confrères* in the manner he has done.

Having said thus much as to the historical aspect of the subject, we are in a position to consider what can be determined as to the affinities of these remarkable birds, which appear to have been very common in Argentina during the Tertiary period. And here I may remind my readers that giant flightless birds occur in the Lower Eocenes of Europe (*Gastornis* and *Dasornis*) and of North America (*Diatryma*); but that at present none are known between that period and the Pliocene, unless, indeed, these Argentine forms belong to some portion of the intervening gap.

As regards dimensions, it appears that these Argentine birds not only rivalled but in some cases actually excelled the largest of the New Zealand Moas—the tibia of *Brontornis* measuring 30½ inches in length, against 39 inches in the tallest Moa; while the skull of *Phororhacos longissimus* is considered to indicate a bird much larger than either *Brontornis* or the most stately *Dinornis*.

The most peculiar feature of these birds is undoubtedly the form and structure of the skull, which is quite unlike that of the Moas or that of any existing Ratite bird. Unfortunately the cranium is at present only known to us by a brief description, without a figure, and we have accordingly to rely mainly on the mandible. In the typical mandible of *Phororhacos*, of which the anterior portion is figured in the accompanying woodcut (p. 42), the most noteworthy features are the enormous size of the specimen, the extreme narrowness and length of the symphysis, the large size of the lateral vacuity, and the somewhat sigmoid profile and upturned point of the entire ramus. To give some idea of the size of this jaw, it may be mentioned that the length of the symphysis is upwards of 6¼ inches, while to the hinder third of the lateral vacuity the length is fully 14½ inches. It may accordingly be estimated that the total length of the whole jaw could not have fallen short of between 20 and 24 inches. Such a jaw must have been as large as that of the extinct Edentate *Scelidotherium*, and Prof. Ameghino may therefore be well excused for having at first taken it for that of a mammal. In general contour this mandible is more like those of *Psophia* and *Cariama* than that of any other living bird. In the cranium the beak is described as compressed and curved, with its tip overhanging that of the mandible; but the most remarkable feature is the occurrence of two alveoli on either side of the upper jaw, which are considered to have carried large teeth. It is further inferred that the skull was surmounted by a horny casque, owing to the presence of rugosities on the frontal region.

It may be remarked here that Prof. Lemoine* has described, in the alveolar border of the premaxilla of *Gastornis*, a large circular swelling which he regards as having been the base of a tooth-like process formed by the jaw itself. It appears to me, however, that this swelling looks much more like a true dental alveolus, which, owing to the shedding of its tooth, had been filled up with bone. And I may add that, as the skull of *Gastornis* is known only by mere fragments, its restoration by Lemoine (in which a length of about 12 inches is assigned to the mandible) is largely conjectural.

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* Rech. Oiseaux Fossiles, pt. ii. (Rheims, 1881).

Prof. Ameghino considers that *Phororhacos longissimus* was of about double the dimensions of *Brontornis burmeisteri*, in which the length of the tibia was 30½ inches!

With regard to the limb-bones of these birds *, the most characteristic features appear to be that the femur had no pneumatic foramen, that the tibia had a bony bridge over the extensor canal at its distal extremity, and that its anterior intercondylar gorge was very deep, with the condyles very prominent. The tarso-metatarsus is of considerable length, and very wide above, with the intercotylar tuberosity very tall and the upper part of the upper surface deeply excavated. In the latter respect this bone resembles the tarso-metatarsus of *Æpyornis*; but in that genus there is no intercotylar tuberosity to this bone, and no distinct intercondylar gorge to the tibia. *Gastornis* has a more slender tarso-metatarsus with a prominent intercotylar tuberosity, and a deep intercondylar gorge to the tibia. It was at first thought that the hallux was wanting, but subsequent research proved this to be incorrect. Unfortunately, nothing appears to have been discovered of the sternum; and the information relating to the wings is still very meagre, although these appear to have been present in some form or other.

That birds of the gigantic dimensions of *Phororhacos* and *Brontornis* must have been flightless is self-evident; and, so far as the present descriptions and figures admit of forming a judgment, there appear no characters by which they, in common with *Gastornis* and *Dasornis*, can be satisfactorily separated from the Ratitæ. In the presence of a bony bridge over the extensor groove of the tibia, the South American forms resemble the *Dinornithidæ*, and thereby differ from all existing representatives of the Ratitæ. They likewise approximate to *Dinornis* (as distinct from the other Moas) and *Gastornis* in the general proportions of the tibia and tarsometatarsus; the trochleæ of the latter bone having, indeed, precisely the same relative lengths as in the European genus. It is true that the lower end of the tibia has not the inflection characteristic of *Gastornis*, but the Moas show that this feature is not of more than generic importance. So far, therefore, as the limb-bones go, *Phororhacos* and *Brontornis* might apparently be distantly related to *Gastornis* and the Moas. The skulls of the latter show, however, that the giant New Zealand birds are of a type widely different from those of South America; although, if we believe in an affinity between the Moas and the Kiwis, we must not attach an undue weight to this point of difference.

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* Casts of some of the limb-bones of *Brontornis* have recently been received at the British Museum.

With regard to *Gastornis*, the case is more difficult. According, however, to Lemoine's restoration, the mandibular symphysis was short, and the upper jaw wider than in *Phororhacos*. Still, however, we have a declination of the tip of the premaxilla comparable to the description of the latter; and, for what it is worth, the presence in both of alveolar-like structures.

That both *Gastornis* on the one hand, and *Brontornis* and *Phororhacos* on the other, cannot be excluded from the Ratitæ as at present defined, appears, as I have already said, certain. If, however, they be rightly included in that group, and the presumed affinity of *Gastornis* to the Anseres be sustained, while the apparent resemblance of the jaw of *Phororhacos* to *Psophia* indicates a relationship, then we shall have confirmatory evidence in favour of the modern German view that the Ratitæ form a compound group, of which the various sections have been independently derived from several perfectly distinct Carinate ancestors, and their mutual resemblances to one another are solely owing to the effects of adaptation. I confess, however, that the supposed Anserine affinities of *Gastornis* appear far from clear to me, while I always feel that the great difficulty in admitting the multiple origin of the Ratitæ is that if this had been the case there would have been far less structural similarity to one another among the various groups than we find to prevail.

IV.—*Notes on the Birds of the Loo-Choo Islands.*

By Henry Seebohm.

My collector, Mr. Holst, has just returned from a visit to the Loo-Choo Islands * and has sent me a box of birds, amongst which are some specimens of great interest.

The numbers prefixed to the names in the following list are those of my book on 'The Birds of the Japanese Empire.'

Except when stated to the contrary, the birds were collected on Okinawa-sima, the largest island in the central group of the Loo-Choo Islands. To other localities belong only a couple of birds obtained during the voyage in the northern group, and a few skins from Tsu-sima.

7. MERULA PALLIDA.

A female shot on the 30th of March, probably a winter visitor.

8. MERULA CHRYSOLAUS.

Four examples. They are said to be winter visitors, from November to May. Great numbers passed through on migration during March. The most numerous Thrush on the islands.

9. MERULA PALLENS.

Two examples.

12. ERITHACUS NAMIYEI.

Mr. Holst has sent two examples of this very distinct species, an adult male and an immature male, which, along with the adult female in the Pryer collection, make a very interesting series.

The adult male is described as having the irides dark brown, the bill jet-black, and the legs flesh-coloured.

The immature male resembles the female in the colour of the upper parts, and on the underparts the black feathers of the chin and throat of the adult male are replaced by dark brown, margined with grey.

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* See Ibis, 1892, p. 575.

16. Monticola cyanus.

Two adult males are typical examples of the Eastern form of this species, *Monticola cyanus solitarius*, with the underparts below the middle of the breast deep chestnut.

22. Tarsiger cyanurus.

Two males, one shot on the 3rd of January and the other on the 29th of December on Tsu-sima, add another species to the list of birds found on that island.

30. Hypsipetes squamiceps.

Three examples shot in February and March belong to the small race known as *Hypsipetes squamiceps pryeri*. Two of them (males) measure 4·7 inches in length of wing from the carpal joint, but the third (a female) is less than any I have previously seen, only measuring as follows: wing 4·3, tail 3·75 inches, bill ·9, tarsus ·8 inch.

32. Zosterops palpebrosa.

Four examples vary somewhat in size. They are all dark in colour. Wing 2·35 to 2·1 inches, bill from frontal feathers ·45 to ·35 inch. They evidently belong to a large race of *Zosterops palpebrosa simplex*.

38. Acrocephalus orientalis.

An example was caught on board the steamer on the 24th of May about forty miles north of Nase-Osima, one of the northern group of the Loo-Choo Islands.

44. Cettia cantans.

A female shot on the 3rd of April measures 2·6 inches in length of wing and 2·5 in length of tail.

45. Cettia cantillans.

Three examples shot in March and April measure about 2¼ inches in length of wing and tail.

47. Cisticola cisticola.

Two males in summer plumage, with a buff band across the tail and no stripes on the crown, are dated 9th and 11th of April. They measure 2·2 and 2·15 inches in length of wing, and may be regarded as belonging to the large race of the Eastern form. The exposed part of the bastard primary measures ·5 inch, and the second primary is ·95 longer, and only ·1 inch shorter than the longest.

52. PARUS ATRICEPS.

An example shot on the 30th of March is almost typical, but a slight shade of green on the mantle shows its affinity to *Parus atriceps minor.*

53 *a.* PARUS CASTANEIVENTER, Gould.

Two examples, one shot on the 8th of February (wing 2¾ inches) and the other on the 14th (wing 2·9 inches), agree with the Formosan *P. castaneiventer* in having very much less chestnut on the mantle than the Japanese species, *P. varius.*

61. CORVUS MACRORHYNCHUS.

Two examples shot in February belong to the small race known as *Corvus macrorhynchus levaillanti* (wing 12–12½ inches; height of upper mandible at centre of nostrils ·52–·6 inch).

78. PERICROCOTUS TEGIMÆ.

Two examples (male and female) shot on the 4th of April.

85. MOTACILLA BOARULA.

Two examples shot on the 26th and 27th of January show that the Grey Wagtail is a winter visitor to the Loo-Choo Islands.

86 *a.* MOTACILLA TAIVANA*.

A very handsome male, with brilliant yellow eye-stripe, flew on board the steamer about forty miles north of Nase-Osima, in the northerly group of the Loo-Choo Islands. Irides dark brown; bill black, paler at the base of the lower mandible; legs greyish black.

92. COCCOTHRAUSTES VULGARIS.

Two examples shot on the 15th of April may have been passing through on migration. Two examples from Tsu-sima, shot early in January, make an addition to the known birds of that island.

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* [*Cf.* Sharpe, Cat. B. x. p. 514.—ED.]

107. PYRRHULA GRISEIVENTRIS.

An example from Tsu-sima, shot on the 29th December, adds another species to the list of birds found on that island. It is a typical example of the race known as *Pyrrhula griseiventris rosacea.*

108. PASSER MONTANUS.

Two examples are typical in colour, both males.

116. EMBERIZA PERSONATA.

A male killed on the 4th of April is described as having had the irides light yellow; legs flesh-colour; upper mandible brownish black, with a light grey base; lower brownish, with a brownish-yellow base.

133. PICUS NOGUCHII.

Sapheopipo noguchii, Harg. Cat. B. xviii. p. 378.

Mr. Holst has sent an adult male and two adult females of this fine species. The irides are described as reddish brown and the pupil as blue; bill pale greyish blue, browner at the base of the upper mandible, and slightly so at the base of the under mandible. Legs and feet brownish grey.

The figure of the type ('Ibis,' 1887, pl. vii.) is a fair representation of the adult, except that the light brown on the throat ought to extend further down the middle of the breast, and the crimson on the underparts is too pronounced on the breast, and not brilliant enough on the belly and under tail-coverts. In the female there is no crimson on the crown or nape. In both sexes the upper parts are much suffused with crimson, but there is no crimson on the wing-coverts.

As regards its generic characters, this bird belongs to the group in which the nasal aperture is concealed by bristles; the fourth digit the longest; the tail much longer than the second primary; the nasal shelf broad; the nasal aperture low; the chin-angle hidden by bristles, and about halfway between the eye and the tip of the bill. In all these respects it agrees with *Picus major*, but it differs from it in having a larger bastard primary, which varies in length from 1·8 to 1·5 inch, being considerably less than half of the length of the second primary.

138. IYNGIPICUS KISUKI.

A female shot on the 7th of February, and two young birds caught in the nest on the 27th of April, may be referred to the small dark race, *Iyngipicus kisuki nigrescens*. Mr. Hargitt has pointed out to me that the Tsu-sima birds belong to the typical form, and not to the larger paler race to which I have erroneously referred them ('Ibis,' 1892, p. 95).

142. TURTUR ORIENTALIS.

A male shot on the 20th of February is a typical example of the species.

146. TRERON PERMAGNA.

Two examples (presumably males) measure 8·2 inches in length of wing from carpal joint, whilst a third (sexed female) measures 7·75. There is no trace of orange on the crown of any of them.

147. COLUMBA IANTHINA.

On the label of an example shot on the 21st of February Mr. Holst has written "Very rare, but said to be common in autumn."

150. CUCULUS CANORUS.

An example shot on the 30th of March measures 8·4 inches in length of wing. The dark transverse bars across the lower breast and belly are rather broad.

156. ALCEDO ISPIDA.

Two adults belong to the Eastern race known as *Alcedo ispida bengalensis*. An immature example shot on the 6th of May has a much shorter bill, the chestnut on the underparts is suffused with greenish brown, and there is more green and less blue on the upper parts.

167. Ninox scutulata.

An example shot on the 15th of April had its stomach full of the remains of small beetles.

168. Scops semitorques.

An example from Tsu-sima makes an addition to the list of birds found on that island.

171. Scops pryeri.

This well-marked species has hitherto only been known from two examples, an adult in the Norwich Museum, and an immature example in my own collection; it is consequently very satisfactory to receive an adult male shot on the 30th of April. The irides are described as amber-coloured, veined nearest to the blue pupil with streaks of light yellowish green. The bill is described as greenish yellow. This species very closely resembles *Scops semitorques*, but it has a longer tarsus and a larger foot, and the feathering only reaches to the base of the toes.

178. Butastur indicus.

Two examples, February and March.

192. Accipiter gularis.

A female shot on the 19th of April had light yellow irides and yellowish-green feet, with black claws. Bill black, basal half light blue.

202. Ardea alba modesta.

An example shot on the 11th of March has black legs and a yellow bill; wing 14½ inches; irides bright yellow.

210. Ardea javanica.

An example shot on the 4th of April (wing from carpal joint 8·1 inches) belongs to the large race known as *Ardea javanica stagnatilis*. Irides light yellow; bill black, except the tip and the basal half of the under mandible, which are yellowish green; legs green, shading into rich yellow underneath the toes and at the back of the tarsus.

255. MERGUS SERRATOR.

A winter visitor; an example shot on the 26th of February.

288. LARUS CACHINNANS.

Probably a winter visitor; an example shot on the 22nd of December.

303. CHARADRIUS FULVUS.

Four examples shot in February appear to belong to the typical race (wing from carpal joint 6¼ to 6½ inches). Mr. Holst says that they were very common on the sea-shore.

306. CHARADRIUS MINOR.

Winter visitor; an example shot on the 27th of January.

309. CHARADRIUS CANTIANUS.

A female shot at Nagomagiri Choda, on the island of Okinawa-sima, on the 9th of February, is a very remarkable bird. On the right foot there is a perfect hallux, with claw complete; on the left foot the hallux is there, but the claw has never been developed or has been broken off. The bird appears to have very pale legs, and consequently belongs to the Chinese race known as *Charadrius cantianus dealbatus.*

329. TOTANUS HYPOLEUCUS.

Two examples (one shot on the 7th of February and the other on the 4th of April) appear to be both adult, but the April bird is in summer plumage. Compared with the winter example, the streaks on the upper breast are far more distinct, as are also the dark bars on the upper parts.

367. GALLINULA CHLOROPUS.

An example shot on the 15th of April.

371 *a*. PODICEPS CRISTATUS.

There is no authentic specimens of the Great Crested Grebe, so far as I know, to be found in any collection of birds from Japan, but an example shot on Tsu-sima in January admits the species into the avifauna of the Japanese Empire. The example is, of course, in winter plumage, and has white lores.

V.—*On Five apparently new Species of Birds from Hainan.*

By F. W. Styan, F.Z.S.

Mr. B. Schmacker, of Shanghai, a well-known conchologist and enthusiastic collector of birds, has kindly placed in my hands a number of bird-skins from the interior of Hainan obtained by his hunters in 1891 and 1892. Among many rare and interesting species represented are five which appear to be new to science, of which descriptions are appended. The rest of the collection I hope to deal with later on.

1. Graminicola striata, sp. nov.

Similar to *G. bengalensis*, but with the feathers of the rump narrowly streaked with black instead of being uniform, the lores and eyebrows pale buff instead of white, and the ear-coverts tawny buff very narrowly streaked with black. The pale tips of the rectrices are tawny on the outer and pale buff on the inner webs.

♂. Length 6·5 in., wing 2·25, tail 3·2, tarsus 0·9, culmen 0·6.

Only two specimens obtained.

2. Pinarocichla schmackeri, sp. nov.

Forehead, crown, and crest rufous brown; mantle greenish olive, shading into olive-brown on the lower back and rump; upper tail-coverts deep rufous brown. Tail, upper surface dull rufous brown; under surface paler with shining golden brown shafts; no pale tips. Primaries and secondaries deep brown, with olive-brown edgings on the outer webs; greater wing-coverts similar, lesser wing-coverts and scapulars like the mantle. Lores, eyebrows, sides of face, cheeks, and ear-coverts dusky grey streaked with blackish, the ear-coverts washed with rufous. Throat and fore neck dull white; breast dusky olive-grey streaked with olive-yellow, shading into clearer yellow on the abdomen and bright buff on the under tail-coverts; flanks like the breast but rather darker. Under wing-coverts pale buff, the least ones yellowish, axillaries olive-yellow; under surface of wing-feathers pale buff on edges of inner webs of secondaries and basal halves of inner edges of primaries. Legs and claws (in skin) deep brown. Culmen black, paler at tip; lower mandible horn-colour, pale at base. Iris dark brown.

Length 8·9 in., wing 4·2, tail 4·25, culmen 0·7, tarsus 0·85.

Several specimens from the interior of the island. This bird is readily distinguishable from *P. euptilosa* by the absence of white tips on the rectrices.

3. CRYPTOLOPHA BICOLOR, sp. nov.

General colour above bright greenish yellow, brighter on lower back and rump; beneath greyish white very faintly washed with yellow, rather clearer on the throat and centre of the abdomen; flanks and thighs slightly washed with yellow; under tail-coverts bright sulphur-yellow. Lores, feathers round the eye, sides of face, and ear-coverts dusky white like the underparts. Feathers of the crown with narrow dark shaft-streaks, and elongated into a well-marked crest. Primaries blackish, outer webs bright greenish yellow, basal portion of inner webs edged with bright sulphur-yellow; secondaries similar, with the inner webs edged for the whole length; innermost secondaries entirely greenish yellow. Tail-feathers entirely bright greenish yellow, with edgings of sulphur-yellow on the inner webs. Under wing-coverts sulphur-yellow, axillaries white washed with yellow. Legs, feet, and claws (in skin) pale fleshy brown. Bill pale horn, darker on upper mandible.

♂. Length 4·35 in., wing 2·45, tail 1·9, tarsus 0·65, culmen 0·5.

Several specimens from the interior obtained in May.

4. CRYPSIRHINA NIGRA, sp. nov.

Entire plumage deep sooty black, with a blue metallic gloss on the crown, wings, and tail. Tail-feathers spatulate and deeply notched at the tip; as, however, they are all much abraded, it is difficult to say how much of the notching is due to nature and how much to accident.

I place this bird in the genus *Crypsirhina*, but it is not improbable that a new genus may have to be created for it. The forehead, lores, and chin are covered by a thick tuft of bristly feathers, and between the eye and the gape is a small triangular bare patch, which, however, may be due to the worn condition of the skin.

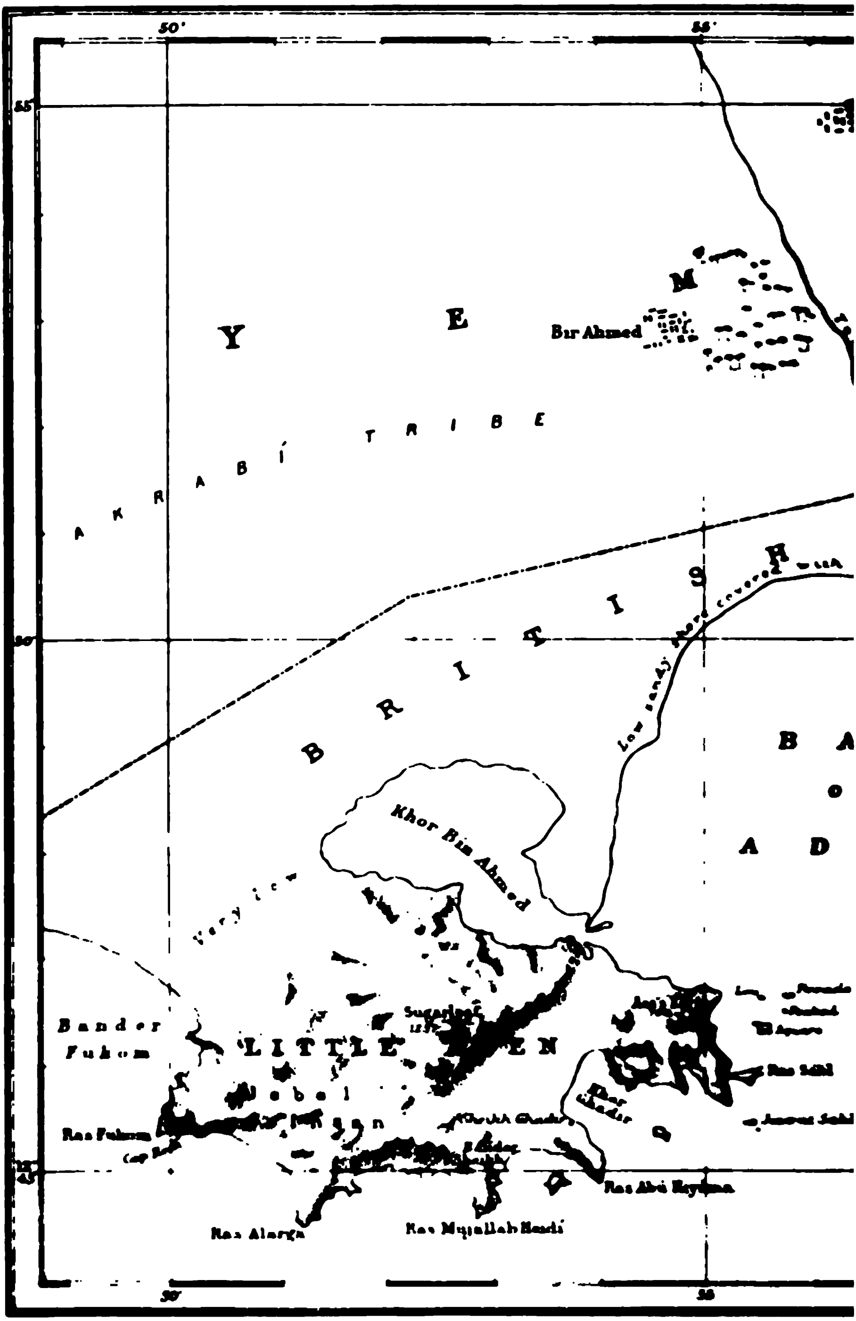
♂. Length 12·25 in., tail 7·5, outermost feathers 2·8, culmen 1, wing 4·7, tarsus 1.

Bill, feet, and claws black. Iris magenta.

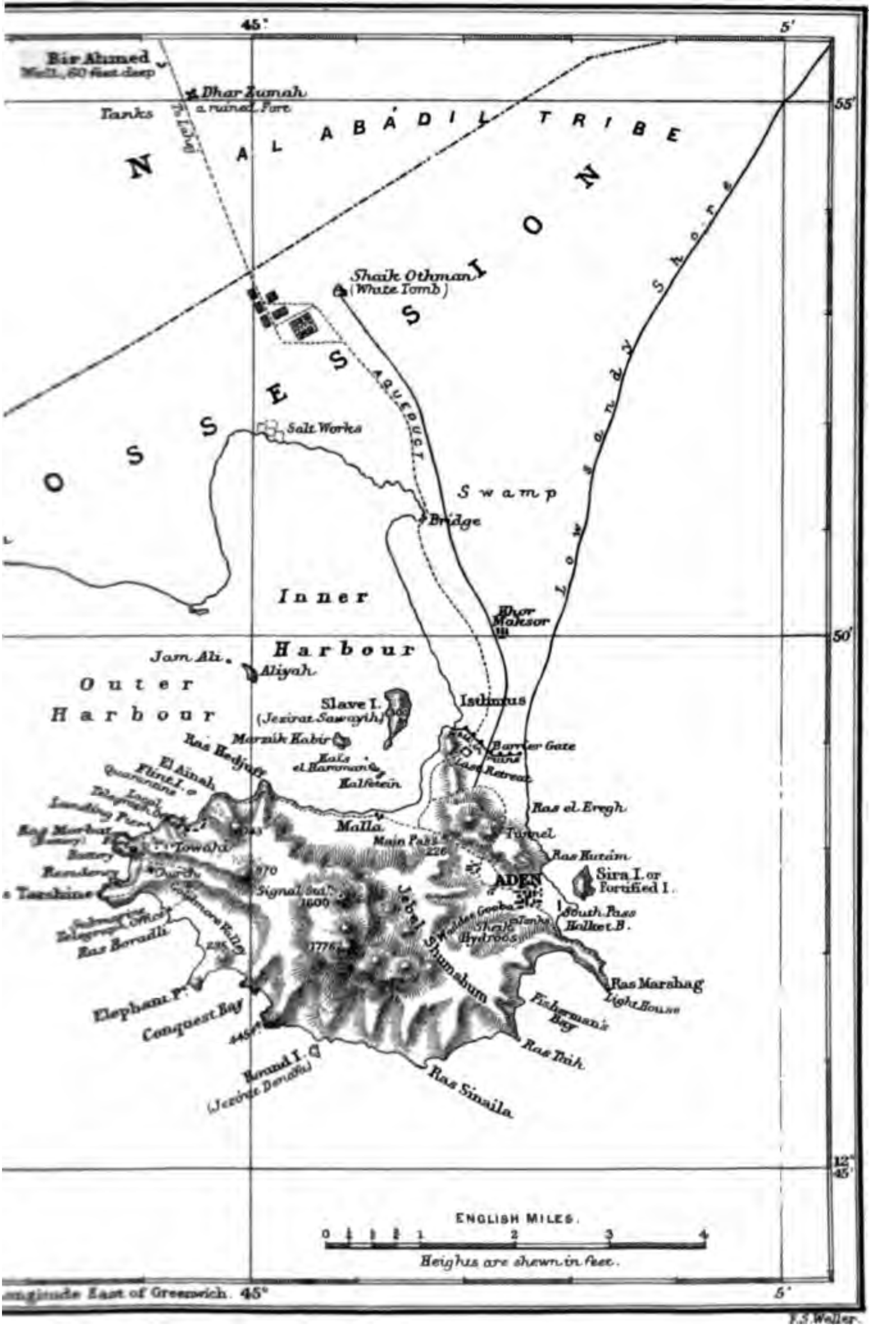
One specimen only from the interior, dated 12th December.

5. ARBORICOLA ARDENS, sp. nov.

Upper parts, including back, scapulars, and rump, olive-brown, regularly barred with black; crown of head and nape more rufous brown, and the barring so small as to have a spotted character. Forehead, lores, chin, throat, sides of face above and beneath the eye, and sides of neck black; ear-coverts black, except basal half, which is pale buff with a vinous tinge; the black of the throat consists of spots through which a reddish-buff ground appears. Above the black eyebrow a narrow streak of pale vinous buff. On the lower throat and upper breast a patch of lanceolate feathers of flaming scarlet, the same colour extending in the form of a collar round the hind neck, where it is paler, more orange, and overlaid with black spots. Breast and sides of body bluish grey washed with earthy brown, the flank-feathers with white shaft-streaks. Centre of body and abdomen buffy white, washed, like the centre of the breast, with vinous. Thighs buffy white. Under tail-coverts earthy brown, mottled with black and tipped with white. Primaries and bastard wing dark brown, the former slightly edged at the extremities with pale brown. Secondaries dark brown, edged externally with pale rufous brown, these edgings broader and more rufous on the inner feathers. Tertiaries, basal portion rufous, followed by a band of pale olive-brown, a subterminal black bar, and a rufous tip. The inner secondaries are similarly marked at the extremity and also the greater coverts, the result being to give the closed wing the appearance of having three series of bars of these colours. Under wing-coverts greyish brown, tipped with white; least series all white. Tail wanting. Beak black. Legs, feet, and claws (in skin) golden brown. Length


50'
55'
55
50
45
Y E
M
Bir Ahmed
AKRABÍ TRIBE
BRITISH
Low sandy shore covered with
B A
O
A D
Khor Bir Ahmed
Very low
Sugarloaf
Bander Fukom
LITTLE EN
Jebel
Ras Fukom
Ras Salil
Khor Ghadir
Ras Abu Kiyama
Ras Alarga
Ras Mujallah Hendi

MA


45°
5'
55'
50'
12° 45'
Bir Ahmed
Well, 60 feet deep
Dhar Zumah
a ruined Fort
Tanks
To Lahej
N
AL ABÁDIL TRIBE
O S S E S S I O N
Shaik Othman
(White Tomb)
Salt Works
Aqueduct
Swamp
Bridge
Low sandy Shore
Inner Harbour
Khor Maksor
Jam Ali.
Aliyah
Outer Harbour
Slave I.
(Jezirat Sawayih)
Marzuk Kabir
Kals el Hammam
Kalfetein
Isthmus
Barrier Gate
Last Retreat
Ras Hedjuff
El Ainah
Flint I.
Quarantine
Local Telegraph Office
Landing Pier
Ras Morbat
Battery
Rendezvous
Ras Tarshine
Towahi
Church
Submarine Telegraph Office
Ras Boradli
Elephant Pt.
Conquest Bay
Round I.
(Jezirat Denahu)
Malla
Main Pass
226
970
Signal Stn.
1600
1776
295
445
Jebel Shumshum
Ras el Eregh
Tunnel
Ras Kutaim
ADEN
Sira I. or Fortified I.
South Pass
Holkat B.
Maidan Gooba
Shaik Hydroos
Tanks
Ras Marshag
Light House
Fisherman's Bay
Ras Tiah
Ras Sinaila
ENGLISH MILES.
0 1 2 3 4
Heights are shown in feet.
Longitude East of Greenwich 45°
5'

F.S.Weller

EN

apparently about 9 in., wing 4·8, tarsus 1·3, beak from gape ·85. Iris black.

One specimen only, from the interior, in bad condition and without the tail; it is sexed as female and has no spurs, but the bright plumage would lead one to think it a male.

Shanghai, 11th August, 1802.

VI.—*On the Birds of Aden.*

By Lieut. H. E. Barnes, F.Z.S.

(Plate IV.)

Aden is situated on the south coast of Arabia, in the province of Yemen (the Arabia Felix of the Ancients), and is 118 miles east of the Strait of Bab-el-Mandeb, in latitude 12° 47′ N., and longitude 45° 0′ E.

The settlement consists of two small rocky peninsulas, Aden proper on the east and Little Aden on the west, separated by a bay forming the harbour, and a strip of land on the Arabian coast, about six miles long and three broad. The total area is about 70 square miles.

The inhabited part, known as Aden proper, is a high rocky peninsula, almost an island, and is connected with the mainland by a narrow, flat, sandy isthmus. It is about five miles long and three wide, and consists of hills of bare brown rock, the highest, Shum-shum, attaining a height of 1760 feet. Its volcanic origin is shown by the existence of a large extinct crater situated at the north-east corner. From this spurs project in all directions into the sea, and the surface is much broken up and is uninhabitable, except in a few places.

The lava is of different colours, but brown and grey predominate. Gypsum and pumice-stone are also found, and several thousand tons of the latter are annually exported to Bombay.

The hills are not so bare of vegetation as at a distance they appear to be. After a fall of rain (of late years no uncommon occurrence) patches of verdure appear; and if the fall has been heavy or continuous, the hill-sides are soon covered with a mantle of green, consisting principally of wild portulaca.

To one who, like myself, has revisited the settlement after a lapse of 25 years the recent change in the climate is very noticeable. During my first stay in Aden (1866–7–8) it rained but once, yet this was sufficient to fill the tanks; while during my last stay (1890–1–2) it rained frequently, more often during the prevalence of the south-west monsoon.

Mammal-life is not very abundant in Aden—a few foxes, dogs, and an occasional jackal are to be met with, and I believe that a small colony of monkeys eke out a scanty existence in the ravines near the summit of Shum-shum. Insect-life is abundant, and there are a few snakes, some of which are venomous.

The resident species of birds are few in number—kites, rock-chats, doves, and pigeons being most numerous.

Fishes are good and plentiful, give fair sport, and afford a welcome addition to the scanty fare of the settlement. Lobsters, crabs, and oysters, as well as other shell-fish, should be avoided by those who wish to keep their health.

At the last census the population, including 7000 at Shaik Othman, was upwards of 38,000, in addition to the floating population amounting to 2000, making 40,000 in all.

The majority of the inhabitants consist of Arabs and Somalis in about equal numbers. They have mostly been born in the settlement, but many are immigrants from Yemen and from the opposite African coast; as a rule, however, the latter are only temporary residents.

These two races differ considerably in appearance: the Arabs are short, sturdy, and muscular, with light brown complexions; on the other hand, the Somalis are tall, thin, and weak, and black in colour. In religion both are Mahomedans.

Other races in Aden are Turks, Persians, Egyptians, Seedees, Hindoos, a few Chinese, and Europeans of all nations. The principal shopkeepers are Parsees. The Jews, who hold a monopoly of the feather-trade, are a very distinct people and have the usual characteristics of their race fully developed. There are but few non-official Europeans, and these are mostly engaged in commerce.

The water-supply of Aden is obtained from several sources, the chief being the condensers, of which there are several, belonging both to Government and to private individuals. The supply next in importance is the aqueduct from Shaik Othman, completed in 1867, the water of which becomes slightly brackish *en route* and among Europeans is used only for ablution. The remaining sources are the wells and tanks dependent upon the rainfall; but the water in most of the former is brackish and unfit for drinking and cooking purposes.

Cattle and sheep of good quality are imported from Berbera and other adjacent African ports; the few coming from the interior of Arabia are not so good. The sheep are noted for the amount of fat in their tails, and a belief is prevalent amongst the soldiers of the garrison that this is due to the sheep always grazing uphill, which causes the fat to accumulate in that portion of their bodies (this may be taken *cum grano salis*). A good tail will weigh three or four pounds, and is pure, but somewhat oily, fat, never becoming solid or suet-like.

There is a considerable sea-trade carried on by small steamers and buggalows, the chief articles being coffee, hides, gum, shells, and feathers.

The salt-works at the head of the harbour, near Shaik Othman, are extensive, and the huge glittering heaps of salt and tall windmills are conspicuous objects to any one driving along the Malla Road. These works were established in 1875, and in the hands of an Italian company have proved a great success.

The climate is not so bad as represented; from October to April it is fairly cool, the thermometer ranging from 75° to 85°. The most trying and dangerous periods are May and September, as during these two months there is no breeze, and the temperature is very high, ranging from 90° at night to over 100° in the daytime.

The south-west monsoon commences early in June and continues until the end of August, and during this time dust-storms are prevalent and disagreeable.

In approaching Aden the first object that catches the eye is the peak of Shum-shum, which is used as a signal-station for the shipping. As you come from the Indian Ocean, Marshag Lighthouse, Elephant Point, Goldmore Valley, and Capes Boradli and Tarshine are passed in succession before the entrance to the harbour is reached. As you enter from the Red Sea, Little Aden is passed.

The harbour is eight miles long from east to west and four miles from north to south, the entrance between Ras Tarshine and Little Aden being about three and a half miles across; it consists of two portions, the outer and the inner harbour. The inner harbour, which is nearly land-locked, is bounded on the east by the Isthmus. The depth of water at low tide in the outer harbour varies from five fathoms at the entrance to about three in the western part; outside to a distance of two miles it is about ten or twelve fathoms.

There are several islands in the harbour, the two principal being Slave Island, near the Isthmus, and Quarantine Island, near the landing-pier.

The principal sight in Aden is the system of water-tanks, thirteen in number, which contain, when full, about 8,000,000 gallons of water. There is no trustworthy record of their origin, but they are supposed to have been commenced about 600 A.D., at the time of the second Persian invasion. It is impossible to give such a description of these tanks as would enable one who had not seen them to form a correct idea as to what they are like. The Shum-shum Hills are nearly circular, and on one side the rain-water rushes into the sea down narrow valleys and gorges; on the eastern side the hills are precipitous, but are broken about halfway down by a tableland, which is crossed by numerous ravines converging into the valley, so that a moderate fall of rain is sufficient to send a torrent of water down the valley into the sea.

To collect and store as much of this water as possible these tanks have been constructed, and every salient feature of the rocks has been taken advantage of, in some cases by the removal of soil, in others by the construction of bands or walls of masonry across the gorges. These reservoirs are so constructed that the overflow of one is conducted into the next, and thus as little water as possible is lost.

Trees have been planted around these tanks and are now in a flourishing condition, converting an otherwise arid spot into an oasis of verdure, largely patronized by promenaders.

The greater portion of the garrison is quartered at the Camp, usually called the Crater; another portion, principally garrison artillery, is stationed at Steamer Point (where also is the sanitarium); and a section is located at the Isthmus. This last is reputably the most unhealthy part of the settlement, probably owing to its ground-level being only about three feet above the sea.

The landing-pier is at Steamer Point; the road to the west leads to Ras Morbat and then branches off in two directions—one leading to the Residency and Ras Tarshine; the other to Ras Boradli, which is the head-quarters of the Eastern Telegraph Company and overlooks Goldmore Valley. Both Ras Morbat and Ras Tarshine are strongly fortified. The road to the east of the landing-pier leads along the crescent, through the Hedjuff Pass (which is also now strongly fortified), then for two miles along the Malla plain, passing through the village of Malla, which is the principal seat of the coasting trade, then ascends by a steep zigzag, which is in charge of a strong military guard.

The descent to the Crater commences as soon as the gate is passed, and for a short distance is very steep. After emerging from the Main Pass the town of Aden comes into view, the road passing along under the fortified Munsoorie Heights, having Shum-shum on the right. The road to the Tanks turns off at right angles, but the main road leads past the native town, having the barracks on the left, through the South Pass (which is defended by a drawbridge) to Holket Bay. Further than this carriages cannot go, the ascent to Ras Marshag having to be accomplished on foot.

Another road branches off at the foot of the Main Pass and leads along the causeway, on the western side of the Isthmus, through the Barrier Gate, giving access to the mainland. About three miles out Khor Maksor is reached, and here the Aden Troup of Cavalry is quartered. The polo-ground is also situated here. Another mile onward the salt-works previously alluded to are reached, and one more mile brings us to Shaik Othman, which is the limit of British territory.

The Isthmus is entered on its western side through a massive gate placed in a gap in a spur running from the Munsoorie Height, on the top of a detached portion of which is the fortress known as the Last Retreat, or Jebel Hadeed. The Isthmus is divided into two unequal portions by another spur from Munsoorie; the larger portion is occupied by the barracks and the rifle-range. The aqueduct ends here.

A short tunnel has been pierced through this spur, giving access to the smaller portion, in which is situated the Arsenal. The Camp is reached thence through a tunnel 350 yards long, excavated through solid rock and sufficiently wide to admit of wheeled traffic.

On the opposite side of the harbour, near Huswa, is a river-bed which is generally dry, containing only an occasional pool of water, but after rain it rapidly fills and discharges into the harbour.

I think I have now said enough to enable every one to form a fair idea of what Aden is like geographically and climatically, and a reference to the accompanying map (Plate IV.) will, I hope, render it even more intelligible.

I regret to have been able to add so little to the knowledge of the Avifauna of Aden, but my duties kept me employed from an early hour in the morning until late in the evening, and it was only on Sundays that I could get out, and even then only after 9 or 10 A.M. I could obtain little or no assistance from native sources, and had not others who had more leisure at their command kindly assisted me, the results would have been still more meagre.

I had intended on my relief to have taken three months' leave, which I should have devoted to systematically working up the avifauna; but owing to an unfortunate accident I was seriously ill for a time and temporarily lost the use of my hand, even now having only partially recovered the use of it, and I cannot hope for any further improvement.

Had I been able to carry out my intention I have no doubt my list would have been almost doubled—to some extent by shore and water-birds, but principally by birds from the Lahej district.

I can only hope that my paper will prove a useful supplement to Major Yerbury's account published in the 'Ibis' for 1886 (p. 11).

1. GYPS FULVUS (Gm.).

I first observed a pair of Griffon Vultures on the 4th January. They were soaring at a great height, over Marshag and Holket Bay, in company with an Eagle or two, and a number of Neophrons and Kites. I could not at the time distinguish their species.

Later, in February and March, they become very common: I have counted as many as twelve together, disputing over sheep and cattle offal and other such-like toothsome morsels, on the rubbish-heaps in Holket Bay.

At the end of March they disappear, and do not return again until the cold season has well set in. I do not think that any of them breed at Aden; but the adjacent inaccessible cliffs offer such splendid building-sites that I should not be surprised to learn that they do so, since the cold weather is the season that Indian Vultures choose for nesting.

One caught alive was taken to Mr. Still, of Messrs. Luke Thomas's firm at Hedjuff; he had it confined in a large portable sheep-pen, one of those in use on board ship. It ate greedily all suitable food offered it, but remained quite fierce, sullen, and untamable. When I left Aden some months later it was still alive, and Mr. Still expressed his intention of sending it to the Zoological Society of London, as soon as he could make satisfactory arrangements.

2. NEOPHRON PERCNOPTERUS (Linn.).

I do not agree with Major Yerbury in thinking that the Egyptian Vulture is a permanent resident, as during June, July, and August scarcely one can be seen, but before and after these months they are very common. Many white birds on their return in October are accompanied by others in the nesting-plumage. This certainly goes to prove that most of them leave us for breeding purposes, but some few may, and possibly do, remain all the year round.

They roost at night in caves in the high cliffs near the Main Pass Gate and other suitable places, and the cliffs at these spots are conspicuously whitened by their droppings.

Of the other two species of Vulture believed by Major Yerbury to occur in the neighbourhood of Aden, one is possibly *Gyps fulvus,* already mentioned, and the other immature specimens of *Neophron percnopterus.*

Captain Bishop, the Port Officer, first drew my attention to the fact that the birds left us in the commencement of June, and in his opinion not a single Neophron ever remains to breed at Aden.

3. FALCO PEREGRINUS, Tunst.

I frequently observed a pair of birds, near the Main Pass Gate, which I think were Peregrine Falcons, and regret that I did not shoot one of them to make sure; but the fact is that the birds resident in Aden are so few in number that I did not care to shoot even one unnecessarily.

I am of opinion that they had a brood close by, but the rocks were inaccessible, and as I never saw more than the pair I cannot be certain. I could see sticks projecting from a ledge of rock which they much affected; still this may only have been an old nest belonging to a Kite.

4. FALCO BARBARUS, Linn.

A female specimen obtained near Lahej, on the 23rd October, which I doubtfully identified as *Falco peregrinus,* on examination by Dr. Bowdler Sharpe was found to be the Barbary Falcon *.

The following dimensions were taken in the flesh:—Length 16·4 inches, expanse 34·25, wing 12, tarsus 1·9, bill from gape 1. The bill was horny black, bluish at base; legs and feet lemon-yellow; claws blackish.

This was the only specimen seen.

5. TINNUNCULUS ALAUDARIUS (Gm.).

The Kestrel appears to be a permanent resident, as I have met with it at almost all seasons. It is not very common, but one pair may frequently be met with on the high cliffs bordering the Malla Plain, where in all probability they breed; and another pair near Elephant Rock in Goldmore Valley.

They appear to be very fond of locusts, which on several occasions during my stay swarmed over the place. The lower class of Arabs are also fond of these locusts, often eating them alive, merely plucking off the wings.

6. ACCIPITER NISUS (Linn.).

I think that the *Accipiter* mentioned by Major Yerbury is the European Sparrow-Hawk.

I saw a pair at the Crater Position, on 31st July. They were swooping at the Pigeons in the Public Works Department Store-yard. I watched them for some time, but they did not succeed in making a capture.

On several occasions I have seen what I took to be the same pair, but always at too great a distance to distinguish them with any certainty.

7. AQUILA CHRYSAËTOS (Linn.).

I saw a pair of very large Eagles in Holkct Bay on the 15th February, and on several occasions since; but I did not shoot one, as I should have had no time to preserve the skin. They were in company with Vultures, Neophrons, Kites, and the Eagles mentioned below, all feeding on carrion, a plentiful supply of which is usually to be found there. They remained only during the cold weather.

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* [Lord Lilford, who has also examined this specimen, refers it to *Falco punicus* (*cf.* Gurney, List of Diurn. B. of Prey, p. 107).—ED.]

8. Aquila imperialis (Bechst.).

Not uncommon. I observed the first one, a solitary specimen, seated on a projecting rock at the Hedjuff, on the 30th October. I did not see another until the 12th December; this one, probably the same bird, was seated on the cliffs, just under the Residency Buildings, at Ras Tarshine, Steamer Point.

On the 15th February I saw no less than five at Holket Bay, and these remained up to the end of March.

9. Pandion haliaëtus, Linn.

The Osprey is fairly common, and is, I think, a permanent resident. A pair frequented Elephant Rock and its vicinity. I found what I believed was their eyrie on the top of this rock; it appeared to be empty at the time, although the birds were sitting close by, but I could not climb the rock, although I tried; a friend who managed to get up somewhat higher than I did, missed his footing and had a bad fall. Another pair was always to be found on the rocks near Marshag Lighthouse, and an odd bird was often seen on the cross-trees of the flagstaff at Ras Morbat.

Captain Bishop informed me that a pair of Ospreys attempted to build a nest on the signalling flagstaff on Barrack Hill in 1889, and it was as much as his establishment could do to prevent them.

They persisted for several days, although the sticks they collected were continually thrown down by the signalling Lascars. I have often seen an Osprey sitting on this flagstaff, but witnessed no attempt at building there; I suppose they were satisfied, or rather dissatisfied, with their efforts in 1889.

10. Haliaëtus leucogaster (Gm.).

I saw an immature specimen of the White-bellied Sea-Eagle on the 19th October; it sailed slowly across Pilot Bay and went towards Goldmore Valley. It came very close to where I was fishing, and I had a good view of it. I never met with another.

11. Melierax polyzonus (Rüpp.).

A specimen of the bird alluded to by Major Yerbury ('Ibis,' 1886, p. 14) as "the handsome blue-grey Harrier with black-tipped wings" was procured at Lahej by Surgeon-Captain Bartlett on the 21st October. The bird was in a decomposed state when it reached me, but I preserved the specimen, as it was quite unknown to me. Dr. Bartlett informed me that the birds were fairly common at Lahej.

The specimen was submitted to Dr. Bowdler Sharpe for identification.

The following measurements were taken in the flesh:—Length 18·5 inches, expanse 37, wing 11·75, tail 8, tarsus 3, bill from gape 1·32. Bill blackish horny; cere deep orange; legs orange.

12. Milvus ægyptius (Gm.).

The Egyptian Kite is very common and is a permanent resident, breeding from early in January to the middle of April. The nests are placed on ledges of cliffs or in niches of buildings. Several nests are built every year on the sloping roof of the Camp Church, resting against the supporting buttresses, which are carried up rather higher than the eaves; the position seems so precarious that it is a wonder that the nests are not blown down.

The eggs, two in number, do not differ in any respect from those of *Milvus govinda*: they measure about 2 inches in length, by rather more than 1·75 in breadth; in colour they are pale greyish white, more or less spotted and blotched with dingy red-brown.

13. Elanus cæruleus (Desf.).

The Black-winged Kite occurs occasionally at Lahej and farther inland; it has been but seldom seen in Aden proper. I met with it in Goldmore Valley early in February.

One procured at Shaik Othman measured:—Length 13 inches, expanse 33, wing 11·15, tail 5·75, tarsus 1·25, bill at front 0·8, bill at gape 1·1. Bill black; cere wax-yellow;

feet wax-yellow; claws black; iris rich orange-yellow (most probably crimson when fresh). The specimen reached me three days after it was shot, and was in a putrid condition.

14. Strix flammea, Linn.

The Barn-Owl is not uncommon in Aden, and is often captured by the Arabs and offered for sale. Four were caught on the 14th October in a small cave on Ras Morbat, and sold to people living on the hill, and I have often met with them since. I examined one very carefully, and am sure that they do not differ in the least from the Common Barn-Owl of Europe.

15. Carine, sp. inc.

I twice saw an Owlet at Shaik Othman, but on both occasions failed to secure it. I think I saw one at Hedjuff, but it may have been the following bird, as it was quite dusk at the time.

16. Scops giu (Scop.).

A small tufted Owl, which I could not identify, was found, on inspection by Dr. Bowdler Sharpe, to be *Scops giu*; it was caught at Ras Boradli on the 28th September. It had hidden itself behind a row of cells in a battery, in a room belonging to the Eastern Telegraph Company.

It measured:—Length 8·75 inches, expanse 17·5, wing 5·8, tail 2·3, tarsus 0·85, bill at front 0·8, bill at gape 0·9. Bill black; legs and feet dusky red. This was the only one obtained, but several of my friends of the Eastern Telegraph Company speak of having occasionally seen a small Owl, both on Ras Boradli and in Goldmore Valley, just below.

17. Hirundo rustica, Linn.

The Chimney Swallow is not very common, and, as a rule, is only found immediately after rough weather, but some few do remain to breed, as I found a nest containing three eggs under the verandah in the upper story of one of the hotels at Steamer Point.

The eggs do not differ in any respect from others in my collection, taken personally in England and in Afghanistan.

They are slightly elongated ovals in shape, and measure 0·71 inch in length by about 0·5 in breadth. The ground-colour is white, speckled and spotted with red-brown, more densely so at the large end.

The appearance of these birds is not confined to any one period of the year; I find from my notes that I have observed them in May, July, August, and December.

18. COTYLE OBSOLETA, Cab.

The Pale Crag-Martin is a common permanent resident, breeding freely in the caves, in the face of cliffs, generally in inaccessible places. I tried to get eggs, and have offered good prices to Arab and Somali boys for them, but without success. I have several times managed to climb up to nests, only to find them either empty or containing young. On one occasion only was I rewarded by finding an addled egg, in company with some unfledged nestlings. This egg is similar to, but rather larger than, the egg of *Cotyle concolor.*

They seem to breed throughout the year, as I have seen nests in February, May, July, and October.

19. CYPSELUS, sp. inc.

Swifts of some kind are not uncommon at Aden; they do not stay any length of time, but appear at intervals, from the end of August to about the middle of October, generally after roughish weather; I have not seen them during the remaining months.

I do not think that any of them breed in Aden, but there are many places between Goldmore Valley and Fisherman's Bay which are well suited to them, and as these places are seldom or never visited by Europeans, the fact of their breeding there would easily escape notice.

20. CAPRIMULGUS, sp. inc.

This is another by no means uncommon bird that I neglected to secure. I saw one at the Isthmus Position on the 30th September. I turned up two more on the 15th October, on Chapel Hill. I made a careful search, but I could not discover either eggs or nestlings, although I have no doubt, from the peculiar action of the birds, that they had a family near.

A fourth came on board the Indian Marine steamer 'Canning,' about 40 miles from Aden, as she was returning from Berbera, when I was on board. It appeared to be very tired, but the Lascars were unable to catch it. The weather was rough, it being the middle of the south-west monsoon (end of July).

21. MEROPS CYANOPHRYS (Cab. et Heine).

This little Bee-eater is very common inland, and is a permanent resident, breeding freely in holes, which it makes in the river bank at Huswah, on the opposite side of the harbour. Most of my specimens were procured there. They occasionally visit the tanks, but do not remain long, there being no suitable places for nesting.

The following measurements were taken in the flesh:—Length, including central tail-feathers, 8·2 inches, expanse 11, wing 3·75, tarsus 0·4, bill at front 0·9, bill at gape 1·4. Bill, legs, and feet black; iris pale orange.

22. MEROPS PERSICUS, Pall.

I only met with the Egyptian Bee-eater on one occasion; this was on the 20th September, when they appeared in hundreds all over Aden; they only remained about two hours. I could not procure a specimen, as I had no gun with me, and as I was on duty I could not leave; I sent an Arab on the errand, but he was delayed by an officious policeman wishing to arrest him for carrying arms without a permit, who detained him so long that by the time he reached me with the gun the birds had all disappeared. I feel sure that I have identified the bird correctly, as it is one with which I am well acquainted.

Mr. Caine, of the Eastern Telegraph Company, showed me the remains of the skin of one which he had procured some three years previously, when, he informs me, a somewhat similar migration occurred. This must be the large Bee-eater alluded to by Major Yerbury ('Ibis,' 1886, p. 15).

23. **Merops**, sp. inc.

I saw a Bee-eater on the 16th March perching on the telegraph wires near the Roman Catholic Chapel. I was on a road lower down, and before I got to the place it was gone. On my return later in the day, I observed it perched on a gravestone in the cemetery, from which it made frequent sallies after grasshoppers, returning each time to the same gravestone. It was rather larger than *M. cyanophrys*, but not so large as *M. persicus*; it appeared to have a blue cap and a dark blue moustachial streak, but as the sun was shining on it I could not distinguish the colours easily.

Captain Light, in a note to me, describes a bird that visited his compound about a week later; this may have been the same bird, his compound being only a very short distance away. His description is as follows:—"Beak black, about 1·5 inch long [this is mere guesswork, as he neither shot nor captured the bird], and slightly curved; top of head reddish grey; breast and neck greyish white; thin band of black from beak to eye, and another round neck. Back, upper part, light grass-green, gradually going off into metallic blue; tail three or four inches long and pointed. Catches grasshoppers and insects flying."

Too much stress must not be laid on these colours; as, seen in bright sunshine, they are apt to be very deceptive.

24. Coracias garrulus, Linn.

The European Roller, or "Blue Jay," as it is usually called, is fairly common inland, and is frequently found in Aden itself; I do not think that any remain to breed, as I have notes of their occurrence from October to the end of April only. A pair was frequently seen in Goldmore Valley during the cold weather, and I was in hopes that they would breed, but they left as soon as the hot season had well set in. A single bird took up his quarters in the tank gardens for some weeks. Besides these, many occasional specimens have been noted, both by myself and others.

One shot on the 23rd October measured as follows:—Length 12·75 inches, expanse 24·5, wing 7·6, tail 5·1, tarsus 0·8, bill from gape 1·65, bill at front 1·15. The bill was blackish; legs and feet yellowish brown; iris reddish brown. This bird was an immature female.

25. Coracias abyssinicus, Bodd.

A Long-tailed Roller was seen and shot by Surgeon-Captain Bartlett, near Lahej, on the 26th October, but unfortunately it fell into an impenetrable mass of thorny jungle, and although he tried for some time he could not get it; the bird therefore still remains undetermined, but in all probability it is the same as that alluded to by Major Yerbury in his paper on the birds of Aden ('Ibis,' 1886, p. 15).

26. Halcyon semicæruleus (Forsk.).

A specimen of this Kingfisher was caught on the 23rd January by Mr. Thompson, in the commissariat condensing shed at Seera; it was a female. The male was caught a day or two later, but the man who caught it pulled out the wing-feathers and spoilt it. Another specimen was captured on a ship in the harbour about the same time, but I had no opportunity of examining it.

The bird measured as follows:—Length 8·6 inches, expanse 14·3, wing 4·2, tail 2·5, tarsus 0·55, bill at front 1·6, bill at gape 2·05. Bill and feet coral-red.

27. Cuculus canorus, Linn.

I first heard the Cuckoo on the 24th August; on the next day a pair was seen on the top of a cliff near the Government condenser at Seera; they, or at least one of them, continued calling at intervals for several days. I tried to shoot one, but could not, as, when seen, they were always on the top of some inaccessible rock and out of range. However, I found one on the 31st of August, lying in an exhausted and dying condition, on the stone steps leading to my quarters. It was in a dreadfully emaciated state and its stomach was quite empty.

Its measurements, taken in the flesh, were as follows:—Length 13 inches, expanse 23·25, wing 8·5, tail 6·5, tarsus 0·8, bill at front 0·8, bill at gape 1·1.

I omitted to note the colours of the soft parts, but in the dry skin the bill is horny brown, and the legs and feet are dirty waxy yellow.

28. Coccystes, sp. inc.

I saw a Crested Cuckoo flying towards the tanks on the morning of the 14th June. I could not get away at the time, but spent the whole afternoon searching unsuccessfully for it.

Personally I have never seen another, but on two separate occasions, during the same month, I have had a similar bird described to me by friends who had observed it—one at Steamer Point, near Ras Boradli, and the other on the Malla Plain.

29. Centropus, sp. inc.

I caught a glimpse of a bird skulking amongst salsola jungle, near Shaik Othman, that may have been the Crow-Pheasant spoken of by Major Yerbury ('Ibis,' 1886, p. 15) as occurring occasionally in thick jungle inland. It was too far away from me to be quite sure, and the bird disappeared immediately it was observed, and although, with the help of half a dozen Arabs, I had the place carefully beaten, I did not see it again.

30. Nectarinia metallica, Licht.

I met with a Sun-bird, probably of this species, at Huswah in December. As it was not in nuptial plumage, I did not preserve it, as I hoped to meet with a better specimen in the hot season. Unfortunately I never saw another.

31. Upupa epops, Linn.

The Hoopoe is a regular visitant during the cold season, appearing about the middle of August, and remaining with us quite up to the commencement of the hot weather. I must have seen at least a dozen during each season, and its appearance was continually being reported to me by others. I should not be surprised to hear of its breeding in some of the secluded gorges between Goldmore Valley and Fisherman's Bay.

32. Lanius lahtora, Sykes.

33. Lanius nubicus, Licht.

34. Lanius, sp. inc.

I have nothing to add to the remarks made by Major Yerbury ('Ibis,' 1886, p. 16) concerning the *Lanii*, except to say that during the cold season I saw in the vicinity of Shaik Othman examples of at least three different species of Shrikes, one of which, if not actually *Lanius lahtora*, was exceedingly like it. One of the others was, I suspect, the Nubian Shrike. They are none of them by any means common.

35. Hypocolius ampelinus, Bp.

I saw a bird flitting about amongst the branching palms at Shaik Othman which I think was *Hypocolius ampelinus*. I have examined several skins of this bird in the Frere Hall Museum at Karachi.

36. Terpsiphone paradisi, Linn.

The Paradise Flycatcher is occasionally met with in the groves and gardens at Shaik Othman. All I have seen have been in the chestnut plumage with short tails. Major Yerbury procured it near Lahej in December, and he notes that those seen were in non-breeding plumage, by which he must mean the chestnut plumage. I regard the white dress as the sign of a fully mature bird, not the nuptial plumage only, as I have met with white birds at all seasons, and have frequently found chestnut-coloured birds breeding. I am referring, of course, to Indian birds.

37. Muscicapa grisola (Linn.).

I only met with the Spotted Grey Flycatcher on one occasion; but I fancy that they are not at all uncommon inland.

The one I saw was in the compound of Captain Light's bungalow, which is near the Gaol, and is one of the very few places in Aden where there are trees of any great size.

This was on the 13th April, and Captain Light informed me that it had been there over a week.

38. Monticola cyanus (Linn.).

The Blue Rock-Thrush is a fairly common and regular cold-weather visitant. A specimen was first noted on the

Hedjuff Rocks about the end of September, and it was frequently seen in the same place up to quite the end of January. Another one frequented an old dilapidated stable in my own compound, from the beginning of October to about the middle of February, and I have often seen others in different places.

I believe the same bird returns to the same place year after year, as in both cold seasons of 1890–91 and 1891–92 individuals were noted in the same spots.

39. Cercotrichas melanoptera (Hempr. et Ehr.).

I have not seen a specimen of the Blue-winged Chat-Thrush alive, either in Aden proper or on the mainland, but Mr. Caine, of the Eastern Telegraph Company, had a wing of one in his possession, which had been procured in Aden the year previous, and Major Yerbury notes it as a "resident inland."

40. Argya, sp. inc.

I failed to procure a specimen of the Babbler, although it is by no means rare. On one occasion I came upon a flock at Huswah, and another at Shaik Othman amongst the branching palms, and they have often been brought to my notice by others. They are, I feel sure, permanent residents.

41. Pycnonotus arsinoe (Hempr. et Ehr.).

Hemprich's Bulbul is a common permanent resident, occurring in all parts of Aden, as well as on the mainland. They breed as a rule during March, April, and May. I found a nest in Goldmore Valley near the end of September containing three almost full-fledged nestlings; but I think this was exceptionally late, and may have belonged to a pair of birds whose first nest had been destroyed.

42. Pycnonotus xanthopygus (Hempr. et Ehr.).

The Yellow-vented Bulbul is common at Huswah and other places inland, and occasionally visits Aden proper. A male shot at Huswah on the 23rd November measured:—Length 8·1 inches, expanse 11·2, wing 3, tail 3·45, tarsus 0·8, bill at gape 0·78. Bill, legs, and feet black; iris white; eyelids greyish white.

Two specimens of a large Bulbul were shot by Mr. Caine at Huswah on the 26th October; he sent them to me by a Somali, who, not being able to find my bungalow, threw them away. He described them as being much larger than those found in Goldmore Valley, and as having blackish heads. He did not notice the colour of the under tail-coverts. These must have been the birds alluded to by Major Yerbury ('Ibis,' 1866, p. 17).

43. ORIOLUS GALBULA, Linn.

An immature male of the Golden Oriole was shot at Lahej on the 21st October, and sent in to me by Surgeon-Captain Bartlett. It was so fat and so decomposed that it was a most unpleasant task skinning it.

The following are the measurements:—Length 10 inches, expanse 17·25, wing 3·5, tail 0·75, bill at front 0·9, bill at gape 1·2. Bill blackish; legs and feet dull black.

44. SAXICOLA ŒNANTHE, Linn.

The Wheatear is a fairly common cold-weather visitor. My first specimen was obtained on the 8th October at Ras Tarshine, Steamer Point. Surgeon-Captain Bartlett sent me another from Lahej, shot on the 24th October, and informed me that he had also seen one at the Isthmus on the 20th October, as he was leaving for Lahej.

They continued fairly common up to the end of the cold season.

A male shot on the 8th October measured:—Length 6·6 inches, expanse 11·9, wing 3·9, tail 2·6, tarsus 1·2, bill at gape 0·9, bill at front 0·52. Bill, legs, and feet black; iris black.

45. SAXICOLA STAPAZINA (Vieill.).

I appear to have overlooked the occurrence of this Chat, although Major Yerbury found it to be a regular cold-weather visitant.

46. SAXICOLA PLESCHANKA (Lepech.); Oates, B. Ind. ii. p. 73.

I met with only a single specimen of the Siberian Chat during my two years' residence at Aden; this was inside Ras Morbat Fort, on the 29th March. It seemed to restrict itself to a very confined area, never being met with outside the precincts of the Fort, and almost always in one particular spot, a hollow formed by the emplacement of one of the machine guns. The Fort Lascars asserted that the bird had been seen in the same spot for weeks past. It was impossible to shoot it where it was, as to discharge a gun inside a fort near a powder magazine is not the sort of thing that meets with approval from the military authorities.

I do not think I am mistaken as to the species, as it is a bird I frequently met with in the Bolan Pass, but it would have been much more satisfactory if I could have obtained a specimen.

47. MYRMECOCICHLA MELANURA (Temm.).

The Black-tailed Rock-Chat is a very common permanent resident, and takes the place which the Robin occupies elsewhere. It is of bold and fearless habits, and, where encouraged, soon becomes familiar. It affects stables, verandahs, old buildings, rocks, &c., preferring those in the vicinity of occupied houses, which latter it often enters in search of crumbs.

It is very fond of perching on rocks, wells, and roofs of houses, and in the breeding-season has a very pleasant twittering song. It breeds from about the middle of March to the end of June, but some may perhaps nest earlier or later, as, after I had procured one clutch of eggs on the morning after I landed, I did not trouble to search for any more, and only took notes of such nests as I accidentally came across, as I do not care to collect eggs of other than Indian birds, and I did not at that time recognize the bird as the mythical "*Cercomela fusca*" of Jerdon and Sir A. Burns.

The nests are placed in crevices of rocks, stone walls, under the eaves of houses, and such like places.

The first nest I found was in a crevice, over the window of a dwelling-house, the opening and shutting of which did not alarm the birds in the least.

The nest is a mere pad, composed of grass, hair, rags, or anything suitable that the bird can find.

The eggs, three in number, are broadish oval in shape, pinched in a little at one end; they are greenish white in colour, spotted, streaked, and blotched with bright red-brown, and having a few underlying specks of faint inky purple; the markings are bolder and denser at the large end, where they not unfrequently form a more or less well-defined cap.

They measure about 0·8 inch in length, by nearly 0·6 in breadth.

A male shot on the 20th September measured:—Length 6·15 inches, expanse 9·6, wing 3·2, tail 2·45, tarsus 0·8, bill at front 0·47, bill at gape 0·8. Bill, legs, and feet black; iris blackish brown.

48. Ruticilla, sp. inc.

I have never met with the Redstart, said by Major Yerbury ('Ibis,' 1886, p. 17) to be "an occasional cold-weather visitant"; but on one or two occasions I have had a bird described to me which may very possibly have been it.

49. Prinia, sp. inc.

I feel quite ashamed of my negligence in omitting to secure this bird, which is not uncommon amongst the shrubs on the hill-sides and in many of the valleys. Some few remain to breed, as on the 1st June I found a nest among the bushes on the Malla Plain containing four hard-set eggs, of the mahogany or brick-red colour typical of the eggs of the ten-tail-feathered Prinias. The nest was also very similar to that of *Prinia socialis.*

The eggs measured 0·63 inch in length, by rather less than 0·46 in breadth.

50. Phylloscopus, sp. inc.

A Brown Willow-Warbler occurs occasionally during the latter part of the cold weather. I did not, however, procure a specimen.

51. Motacilla alba, Linn.

The White Wagtail is a very common cold-season visitor. It commences to arrive about the end of September and remains quite up to the commencement of the hot weather. I have not noticed them at any other time.

52. Motacilla feldeggi, Michah.

I have occasionally met with the Black-headed Wagtail on the Malla Plain, and have seen it once or twice in Goldmore Valley, but I believe it is more common inland. Of course it only occurs in the cold weather.

53. Corvus culminatus, Sykes (?).

I remember when I first came to Aden, in 1866, there were usually three or four Crows to be seen at the Isthmus: they seldom visited any other portion of the Peninsula; now, in 1892, they may be frequently met with in other parts, but never more than one or two together.

They were stated never to breed, owing (it was said) to their all belonging to the sterner sex; they were understood to have been imported some 20 years previously by an officer of the Bombay Infantry. If this is correct, there can be little doubt but that the birds are Common Jungle Crows of India; they are certainly not *Corvus splendens.* This would make their age about 45 years; which is, I think, rather a long period for even a Crow to live. They seem to have lost the usual habits of the Crow-tribe, being very shy and retired and never coming near the barracks, although they are never molested. They keep as a rule more to the bare rocky hills bordering the Isthmus Plain, living, I suppose, principally upon locusts and lizards, the former of which are at times very abundant. They are frequently seen on the seashore searching among the débris left by the receding tide, and are often rewarded by a succulent morsel, in the shape of the half-rotten entrails of the large horse mackerel or head of a common shark. The fishermen clean their fish before landing, and, immediately on the capture of a shark or dogfish, cut off the head and throw it into the sea, and this it is that keeps the wild dogs and foxes alive.

At the time I am speaking of, no other Crows, except these few, were ever seen; but soon after the viaduct was constructed from Shaik Othman to the Isthmus they became quite numerous to within less than half a mile of the Barrier Gate. I counted 58 between the latter place and Shaik Othman, and often, standing on the Victoria Bastion at the Isthmus, I have counted over a dozen. They do not appear to pass into the Isthmus very often, and when they cross do not remain long, finding, I suppose, very little inducement in the shape of food.

These Crows seem not to differ from those inside the Isthmus.

I noticed two or three birds much marked with white, one of which had a distinct white collar, but I do not think they were specimens of *Corvus capellanus,* although Captain Light gave me two skins of the latter which he had procured at Berbera, on the Somali coast; these were unfortunately so badly cured that, getting damp, they fell to pieces.

54. Corvus corax, Linn.

I have not myself seen the Raven; but a friend, who spent some days at Lahej, informed me that he had seen a pair there consorting with ordinary Crows; and Mr. Hammond Brazier, of the Military Works Department, whose duties frequently took him to Shaik Othman, says he has occasionally met with them between the Isthmus and that place.

55. Dilophus carunculatus (Gm.).

The only Wattled Starling I met with was in a large aviary. The Arab from whom it had been purchased asserted that he had caught it near Huswah.

56. Hyphantornis galbula (Rüpp.).

The Golden Weaver-bird is one of the commonest permanent residents in Aden, and is equally abundant in suitable places inland. They are, however, somewhat locally distributed; several pairs may always be found nesting at the tanks, and in an adjacent garden belonging to a Parsee. They have made many attempts to breed in the Commissariat Transport Lines; but the muleteers' children always destroy the nests, in spite of all orders and precautions. The place where they breed most is in the compound of a house, in the Native Infantry Lines, near the Gaol. There are some fairly large trees in this compound, and as water is procurable close by the place is exactly suited to them.

They breed in colonies at all seasons of the year. I find from my notes that I have taken eggs in February, April, June, July, October, and in December, on Christmas Day.

The nest is pendent and retort-shaped, and is firmly attached to the end of a twig; it measures about 6 inches from top to bottom, 6 inches in its greatest width, and about 3 inches in depth. Most of them are very neat and compact, but this depends to a great extent on the nature of the material of which they are composed; those composed of grass are untidy compared with others made of the long thin leaves of a tree that bears large trusses of bright yellow flowers, the name of which I have forgotten. These leaves are over a foot long and are very narrow, and along both sides have a row of narrow leaflets, making the edges serrated, which must help greatly to keep the leaves in their position in the nest. Many of the nests have no tubular entrances, but others have them about two inches long; and as they are made last of all, and, as I believe, after the young are hatched out, and are composed of green leaves, the effect is very peculiar, the body of the nest being often dry and the neck of a vivid green.

I am of opinion that they occasionally, at all events, make use of the old nests over again, merely patching them up a little; but Captain R. H. Light, of the 17th Bombay Infantry, who was living in the bungalow, and had ample opportunities of observing them, has a different notion. He says in a letter to me:—" I had an idea that they bred in the old nests again, but that is not so. I saw a bird pecking in a curious way at a nest out of which I had taken an egg a few days before. On going closer, I saw the bird was vigorously pulling the nest to pieces, as every now and then pieces of it fell down. At intervals it flew off to another tree to rest awhile. When the nest was demolished, the bird flew to a tree some twenty yards off and cut off a leaf with its beak. It flew to the place of the old nest again and began to twist it fast on to the twigs of the tree, hanging by its claws and working its body about in arranging the leaf. When it got fairly advanced with the nest it would bring a leaf and force one end of it into an open space; then, letting go and flying up above the nest, it would pull the end through and again place it in another space; in fact the process was similar to our weaving or plaiting, and was very cleverly done. I noticed that the bird never broke off leaves from the tree the nest was built on, but from an adjoining one."

This pulling the old nest to pieces may, however, have been an exceptional case, and was probably due to sheer petulance on the part of the bird at having her egg taken; but it is strange that she should have built another nest in exactly the same place.

The eggs, usually three in number (occasionally only two), are of two very distinct types, and no one but an experienced oologist would ever believe that they both belong to the same species. The ground-colour in one type is white, in the other it is more or less deep blue; both descriptions are thickly spotted and blotched with bright brick-red; both types are very handsome. In shape they are elongated ovals, pinched in a good deal at one end, and measure about 0·81 inch in length by rather less than 0·57 in breadth.

A male measured as follows:—Length 6·2 inches, expanse 9·4, wing 3·25, tail 2·4, tarsus 0·9, bill at gape 0·6, bill at front 0·58. Bill black, legs fleshy, iris orange.

57. Estrilda rufibarba, Cab. (Sharpe, Cat. B. xiii. p. 394.)

This Waxbill is very common inland, but I have never met with it in Aden proper. I have had specimens from Lahej and Huswah, and think I saw it close to Shaik Othman amongst the salsola bushes, but the ground was so swampy that I could not get near enough to shoot one.

58. Uroloncha, sp. inc.

A Munia, very similar to the Plain Brown Munia, occurs at Huswah.

59. **Passer, sp. inc.**

The identity of the Aden Sparrows must still remain undetermined. They are most abundant inland, especially at Shaik Othman; they frequently come to the tanks and I have often seen one in the Transport Lines, but they do not seem to remain in these latter places. Unfortunately the only specimen I preserved was immature, and as it had been tied up a whole day in a camel-man's puggaree before it reached me, it was quite unrecognizable. I always meant to get another; but, having to leave Aden rather suddenly, I could not do so.

Mr. Brazier tells me that he kept a score of these birds in an aviary, but that their pugnacity was so great that all but two soon met their death from the onslaught of others.

60. PYRRHULAUDA MELANAUCHEN, Cab. (Sharpe, Cat. B. xiii. p. 655.)

The Black-crowned Finch-Lark is a permanent resident, and is most common on the sandy plain between the Isthmus and Shaik Othman. I found a nest containing two partly-fledged young ones on the 4th February, but was never fortunate enough to find a nest with eggs; a pair was occasionally seen on the sandy plain at Steamer Point, but I do not think they bred there, the place being too public, more so since golf came into fashion.

61. ALAUDA CRISTATA, Linn.

The Crested Lark is a common permanent resident inland, and frequents the sandy plain that forms the Isthmus joining Aden proper to the mainland. I never succeeded in finding a nest.

They occur occasionally in Aden itself, but only as temporary visitors. I have often seen a pair on the Malla Plain, and have noticed them on the maidan at Holket Bay.

62. ALÆMON DESERTORUM (Stanley).

I think the Desert Lark is the commonest Lark occurring in the neighbourhood. They are found in much the same localities as the other species, showing perhaps a more decided preference for the sea-shore and the paths between the salt-pans.

A pair frequented the Sapper parade-ground at Steamer Point during the whole of July, and evidently had a nest somewhere near, which for a long time baffled all my efforts to find it. After some long and persevering attempts I at last discovered it. In a corner of the parade-ground there was a clump of half-dead portulaca plants and stunted salsola bushes, and in a natural depression in the ground, under one of the plants, the nest was placed; it was well hidden.

Golf is extensively played on this and the surrounding maidans, and the nest being in a direct line between two holes, the ground all round was much tramped upon, and some clumsy golfer, just before I found the nest, had put his foot on it and smashed the eggs; from the fragments I believe there must have been two, and that they were slightly incubated. It seems strange that the birds did not desert the spot earlier.

This was the only nest I found.

63. MIRAFRA, sp. inc.

A Bush Lark, but of what species I cannot say, is sometimes met with in the salsola jungle near Shaik Othman; but it is not, I think, a permanent resident.

Besides this there is one, if not two, other species of Larks of which I failed to procure specimens.

[To be continued.]

VII.—*Comparative Notes on the Swifts and Humming-birds.*

By R. W. SHUFELDT, M.D., C.M.Z.S.

THERE are still to be found among living systematic ornithologists some who contend that the Humming-birds (*Trochili*) are more or less nearly related to the Swifts (*Cypseli*), following, as they do, the erroneous idea of former naturalists who had but very meagre notions of the structural characters of birds. It would seem better, however, for the ornithologists of these days, to whom I refer, frankly to confess that they are not as yet in possession of a sufficient array of facts to decide definitely upon the affinities of such a group of birds as the Humming-birds, than it is to blindly put forward in their works the statement that the Humming-birds are related to the Swifts, especially when we now have so much at our command clearly indicating that no such kinship exists.

If we take Dr. Coues, for example, he has said of the Swifts that their "real affinities are with the tenuirostral Trochilidæ (Humming-birds) in every structural peculiarity" *, and then, to be thoroughly inconsistent, immediately thereafter, upon succeeding pages of the work quoted, proceeds to show, by an array of "structural peculiarities," for his two families, the Cypselidæ and Trochilidæ, how widely different those two groups really are! But Dr. Coues also believes that the tongue in the Humming-birds "is in effect a double-barrelled tube, supposed to be used to suck the sweets of flowers" †; so really we hardly ought to be called upon to accept this writer's statement that "the Trochilidæ, in all essential structural characters, are nearest related to the Cypselidæ," when he displays such an evident lack of knowledge of the "structural peculiarities" of the tongue in these birds.

Recently Mr. R. Ridgway has had his share in keeping alive the false idea that Swifts and Humming-birds "are more closely related to each other than are either to any other group of birds," and he has added that, "in fact, except in the shape of the bill and structure of the bones of the face, the Humming-birds and Swifts present no definite differences of osteological structure" ‡. Such a statement can mean nothing more than that Mr. Ridgway is quite ignorant of the skeletal characters of both the two groups of birds to which he refers.

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* Coues, E. 'Key to North-American Birds.' Revised ed. 1884, p. 456.

† *Loc. cit.* p. 458. It is not at all strange that Mr. R. Ridgway should believe that the tongue of the Humming-birds is hollow (as he has published in a recent work of his, quoted further on), for he has never pretended to have personally examined into the anatomy of the group at any time. That such is not the case every comparative avian morphologist very well knows.

‡ Robert Ridgway, Curator, Department of Birds, U.S. Nat. Museum. "The Humming-Birds." Rep. of Nat. Mus. 1890 (pp. 253-383), p. 290. Washington, D.C., 1892.

Both of the authorities we have quoted above are very wide of the mark in this matter, as I shall attempt to show in the present contribution to the subject. Let me state, in the first place, that it is not my object to demonstrate here the affinities of either the Swifts or the Humming-birds; indeed, in the case of the latter I am prepared to say but little more than that they are not especially related to the former; and as for the former, the Swifts themselves, they are undoubtedly, as say both Parker and Huxley, related most nearly to the Swallows*, and I place great store by what the two last-mentioned authorities say in regard to the comparative morphology of birds and the deductions to be made therefrom. Again, to ascertain the true affinities of birds, as in the case of the two groups we are about to compare, we should not rest satisfied with simply contrasting a few of the corresponding "osteological structures" in the two groups, or with comparing "their bills." Nor should we be lulled into a state of what Professor Huxley pleases to call absolute "cocksureness" of our convictions in such a matter, from the additional facts that Swifts and Humming-birds both give vent at times to a sharp twittering note, and that they have a *superficial resemblance* in their pectoral limbs, and some very few other points superficially alike; but we should, on the other hand, critically compare, in a scientific manner, *everything* that is known of the two groups under consideration, for in this way only can the real truth be arrived at.

Now I consider the Swifts of the world to constitute the suborder CYPSELI, and the Humming-birds to constitute another suborder, the TROCHILI. To properly contrast the many and fundamental *differences* to be found in these two groups, we will arrange the data in double columns, much after the forcible fashion of those savants who are wont to contrast the characters they find, in the forms they compare, in "synoptical tables."

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* Parker, Wm. Kitchen, F.R.S. 'The Zoologist,' March 1888, pp. 2, 3. "I agree with my friend Dr. Shufeldt that the Swallow and Swift are near akin."

Huxley, Thos. H., F.R.S. P.Z.S. 1867, p. 452. "And the Swifts essentially resemble the Swallows, though the form and proportions of the palatine bones are somewhat different."

It is important to look into the relative NUMBERS and the GEOGRAPHICAL DISTRIBUTION of the Swifts and Humming-birds, and we find the following:—

CYPSELI.	TROCHILI.
1. About 50 species.	1. About 500 species.
2. Warm and temperate parts of the world.	2. Peculiar to America.

It is a fact of no little significance that about 100 species of Swallows have also been described, and that, as in the case of the Swifts, they are to be found in all suitable localities over the entire globe. How is it that the Swifts are not restricted to America, as are the Humming-birds?

We may next consider their FOOD and their MEANS OF OBTAINING IT, and some few HABITS in connection therewith. This is what we find:—

CYPSELI.	TROCHILI.
3. Subsist upon insects, usually of some considerable size, and always captured by the birds during rapid flight through the air.	3. Subsist upon insects, and largely upon the sweets of flowers; the insects are of the most minute varieties, and are of *entirely* different species from those sought by the Swifts, and are taken chiefly from within the corollæ of tubular flowers, by the aid of the bird's long bill, and while it rapidly hovers before those receptacles.
4. Very rarely or never known to perch in trees and elsewhere.	4. Very frequently perch on the twigs of trees and plants, after the manner of ordinary birds.
5. Flight generally performed at greater or less heights above anything on the earth, and of extraordinary power; circling, and usually of great rapidity.	5. Flight generally performed at greater or less heights above the surface of the ground, averaging *not over* ten or fifteen feet. Apart from its remarkable power and rapidity, very different from the flight of Swifts. Frequently undulating; darting; often with body stationary and wings in rapid motion, &c.

Here we see an entire divergence in food, in methods of securing it, and of perching, quite as different as in any two other groups of carinate birds, however remotely related they may be: for example, the Kingfishers and the Parrots. Every ornithologist is aware how utterly different is the flight of a typical Swift and a Humming-bird, and even Coues has said of the Common Chimney Swift (*Chætura pelagica*), "Like the Swallows, which this bird so curiously resembles, not only in its form, but in its mode of flight, its food, and twittering notes, it has mostly forsaken the ways of its ancestors, who bred in hollow trees, and now places its curious open-work nest, of bits of twig glued together with saliva, inside disused chimneys, in settled parts of the country"*. To this I should add that these Swifts not only "curiously resemble" Swallows in those particulars, but are *absolutely like* them, and had not my friend been blinded by the idea of Cypselo-trochilidine affinities, he would have thought likewise. How is it that he did not attempt to compare such Swallow-like characters in a Swift with what he might find in a Humming-bird? Simply because the latter do not have them†.

Among special Habits we note that in—

CYPSELI.	TROCHILI.
6. Nearly all species of the suborder nest and roost, often in thousands, in caves, fissures in cliffs, hollow trees, disused chimneys, or similar places.	6. All species of the suborder known to me nest apart in pairs, and roost separately in the trees or shrubberies. These birds are never seen in "*flocks*," except when their great abundance makes this appear to be the case.

7. The habits of nidification, the number of eggs, the manner of rearing the young, and all such matters are all things so well known in the Swifts and Humming-birds, and yet at the same time so absolutely,

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* *Op. cit.* p. 157.

† In the same place Coues also says of the Chimney Swift, and it applies to many other species, I suppose, "So great are the volatorial powers of this bird that the sexes can come together on the wing." Let me ask Dr. Coues: Is that not the normal mode of copulation in *Chætura*, and has he ever seen the act performed in that manner among any of the *Trochili*?

utterly different in the two suborders, that comparison here would simply mean to occupy valuable space that I prefer to use in making comparisons in structure. Let us remember, however, that Dr. Coues notes in the case of Swallows that "formerly they all bred on cliffs, in banks, in hollows of trees, and similar places, and many do so still" (*op. cit.* p. 321); and some Swallows, too, do lay *white* eggs, and in *number* these are more apt to agree with the *Cypseli*, I think, than with the *Trochili*!

A few more points are as follows:—

CYPSELI.	TROCHILI.
8. Sexes alike (as is generally the case in the Swallows?)	8. Sexes markedly unlike (with but one or two rare exceptions?).
9. Birds all of moderate size (as is the case in the Swallows).	9. Birds (with but one or two exceptions) all of the most diminutive size to be found in the class.
10. Coloration extremely plain; plumes, crests, gorgets, remarkable variation in tails never present. (Agreeing in the main with Swallows.)	10. Coloration among the *most* brilliant of all birds; as a rule, the presence of freaks in feather-ornamentation is frequent and extravagant in form and colour.
11. "One of the most remarkable points in the structure of the Cypselidæ is the great development of the salivary glands" (*Sclater*).	11. Salivary glands *not* remarkably or even abnormally developed.
12. General form of the plucked body in some species like the Swallows.	12. General form of the plucked body in *none* of the species ever having any resemblance to that of the Swallows.
13. Pterylosis is but a departure, in most species, from the common passerine pattern as seen in the Swallows.	13. "Pterylosis is characteristic" (*Coues*). Differs in a number of particulars from what we find in either Swifts or Swallows.

Dr. Sclater has said of Nitzsch's 'Pterylography,' in his preface to the English translation, "that it is one of the most valuable and suggestive works on pure ornithology ever published." And until such labours are followed up and fully accomplished, "we can never hope to arrive at a correct knowledge of the affinities of this very difficult class of Vertebrates" [Birds]. Yet Nitzsch, in that work (p. 86), in speaking of the classification and pterylography of the "Macrochires," was compelled to admit that,—"In this family I place the two genera *Cypselus* and *Trochilus*, which, indeed, present but little external similarity;" and yet Nitzsch surely knew something of the *external* similarities of various forms of birds!

But let us examine a little further the "external characters" or TOPOGRAPHICAL ANATOMY of these two suborders:—

CYPSELI.	TROCHILI.
14. Have characteristic parasites that infest them: one a large and peculiar species [*].	14. Also have parasites infesting them, but of very different species from those found on the *Cypseli*.
15. "Bill very small, flattened, triangular when viewed from above, with great gape reaching below the eyes; unnotched, unbristled, the gape about six times as long as the culmen. Nostrils exposed, superior, nearer culmen than commissure, the frontal feathers tending to reach forward under them" (*Coues*).	15. "The bill exhibits the tenuirostral type in perfection, being long and extremely slender for its length; it is usually straight, subulate, or awl-shaped, or with lancet-shaped tip; it is often decurved, sometimes recurved, and again bent almost at an angle; in length it varies from less than the head to more than all the rest of the bird. The cutting-edges of the mandibles are inflected; the rictus is devoid of bristles. The nostrils are linear, with a supercumbent scale or operculum, sometimes naked, often feathered" (*Coues*).
16. Wing has 10 primaries and 9 secondary quill-feathers. Tail of 10 rectrices.	16. Wing has 10 primaries, never more than 6 secondary quill-feathers. Tail of 10 rectrices.

In so far as any possible affinity is concerned as existing between Swifts and Humming-birds, surely those that think they see it can gain but little comfort from the fact that the members of both groups possess 10 primaries in the wing and 10 rectrices in the tail. What significance can it possibly have when Swifts have 9 secondaries, Humming-birds but 6, while the *pteryloses* are so very different in both cases, as are also the patterns of the wings and tails themselves?

Caprimulgi, as a rule, says Dr. Coues, have 10 primaries in their wings, and "more than 9 secondaries," while the tail, variable in shape, has 10 rectrices; yet I hardly think that my distinguished friend is prepared to retain the Goatsuckers along with the Swifts in his group *Cypseliformes*, as he did in the revised edition of his 'Key' in 1884. Dr. Coues has "looked over" some papers which I published in the journals of the Linnean and Zoological Societies of London since that date, even if Mr. Ridgway has not.

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[*] See paper by Charles O. Waterhouse, P. Z. S. 1887, p. 168.

CYPSELI.	TROCHILI.
17. Wings extremely long; primaries never of peculiar form.	17. Wings not specially long; first primary frequently of very remarkable form.
18. Feet small, weak, the envelope often skinny, and the tarsi may be naked or feathered. "Hind toe frequently elevated, or versatile, or permanently turned sideways or even forward; lateral toes nearly or quite as long as the middle; anterior toes deeply cleft, the basal phalanges extremely short, the penultimate very long, the number of phalanges frequently abnormal (2, 3, 3, 3, instead of 2, 3, 4, 5)" (*Coues*).	18. Feet (in proportion with size of bird) rather small, though strong and admirably adapted for *perching*. Envelope not skinny. Tarsi naked or feathered (but the feathering of a very *different* character as compared with Swifts). Hind toe incumbent, never versatile or permanently turned sideways, and *never* forward; lateral toes *not* as long as the middle one; anterior toes *not* specially deeply cleft, the basal phalanges *not* extremely short, and the penultimate very long. The number of phalanges *never* abnormal.
19. "Claws sharp, curved, never pectinate" (*Coues*).	19. "Claws all large, sharp, and curved" (*Coues*).

And, as in the Swifts, so in the Swallows, we find that "the claws are comparatively strong, compressed, well-curved, and acute, apt for clinging" (Coues, Rev. ed. 'Key,' pp. 320, 455, 458).

Passing next to a consideration of some of the deeper structures, we find:—

CYPSELI.	TROCHILI.
20. Superior mandible wide and not produced.	20. Superior mandible narrow and usually twice as long as the head.
21. Triangular openings between nasals and frontals, divided by the premaxillary (*Chætura*).	21. No such openings present.

22. Cranium above smooth and rounded.	22. Cranium above showing a deep longitudinal groove for ends of hyoid.
23. Vomer truncated.	23. Vomer long and spine-like.
24. Maxillo-palatines prominent and produced well backwards, tending to approach mesially.	24. Maxillo-palatines not prominent, being rounded and wide apart.
25. Postero-external angles of palatines produced as prominent processes.	25. External margin of each palatine nearly straight, and no angle present.
26. Palatine heads of pterygoids nearly meeting mesially.	26. Palatine heads of pterygoids widely separated mesially (and I have seen specimens where they *anchylose* to the palatines).
27. Pars plana small and formed as in Swallows.	27. Pars plana very large and very different from that of the Swallows.
28. Interorbital septum shows several vacuities, and these are distinct from those on the posterior orbital wall.	28. Interorbital septum never shows but one vacuity, which merges with one that absorbs nearly all the posterior orbital wall.
29. Mandible a wide V, without ramal vacuity.	29. Mandible a long and extremely narrow V, with ramal vacuity.

These cranial characters are extracted from a memoir of mine which appeared in the Linnean Society's 'Journal' (Zoology) (London, vol. xx. p. 376), and I will, throughout the remainder of the present article, continue to quote from the same source in a great many instances. Ridgway publishes the statement in his 'Humming-Birds' that "while the skull in general shows but little to indicate relationship with other groups of birds, the base of the cranium is very Swift-like." It is obvious that Mr. Ridgway has never compared the "base of the cranium" of Swifts with the corresponding part of the skeleton in a *Swallow*, for had he done so he most surely would have seen precisely what Professor Huxley saw years ago, when he said that "in their cranial characters the Swifts are far more closely allied with the Swallows than with any of the Desmognathous birds, the Swift presenting but a very slight modification of the true Passerine type exhibited by the Swallow" (P. Z. S. 1867, p. 456).

CYPSELI.	TROCHILI.
30. The entire *tongue* or hyoidean apparatus essentially differing but very little from the Swallows.	30. The entire hyoidean apparatus characteristic, being utterly different from the Swifts, and the tongue capable of protrusion, with a mechanism much as is possessed by the Pici.

31. Carefully comparing THE BRAIN in several specimens of Humming-birds of different species and genera with the brains of Swifts and Swallows, I find that, although in all three groups the brain and its parts are strictly fashioned upon the true avian plan, in the Swifts and Swallows its general and special form is far more alike than it is when we compare it with the brain in a *Trochilus*. This we might naturally have looked for, since the inner shape of the cranial casket in the Humming-bird is very different from the corresponding cavity in the *Cypseli* and *Hirundines* (Journ. Linn. Soc. Lond. vol. xx. p. 376). This paragraph I also quote from my Linnean memoir, of which my friend Mr. J. E. Harting, F.Z.S., was good enough to write me in a valued letter under date of August 20th, 1889, as follows:—"I have read this memoir very carefully with great satisfaction, and regard it as a most important contribution to the Anatomy of Birds. I am the more pleased with it because I have always held that the case for the relationship between the *Cypseli* and *Trochili* has been overstated, not to say exaggerated, and I am accordingly glad to find that the results of your researches support entirely and conclusively the view I have hitherto maintained."

To sum up as far as we have gone, it would seem well to state here that in the case of a typical Swift and a Humming-bird the anatomy of the ENTIRE HEAD of the one is as essentially different from that of the other as it is possible for two carinate birds to be in such particulars. When I say the anatomy of the head I mean the *entire* face and associated structures: the pterylosis; special organs, as the tongue, salivary glands, air-passages, &c.; the muscular, nervous, and vascular systems; the skull; and the character of the plumage. I challenge any fair-minded capable ornithologist to come to any other conclusion after he has examined and compared a sufficient amount of material.

CYPSELI (*Chætura pelagica*).	TROCHILI (*Trochilus rufus*).
32. The last caudal vertebra is the 35th.	32. The last caudal vertebra is the 32nd.

33. Pelvis essentially agreeing with the pelvis in most Swallows. The leading sacral vertebræ do not markedly project beyond the ilia.	**33. Pelvis characteristic and peculiarly formed. Two entire vertebræ project beyond the ilia (18th and 19th). No special resemblance to the pelvis in any Swift.**
34. Sternum unnotched posteriorly; comparatively large costal processes; small manubrium; deep carina, which latter and the sternal body are always riddled with large vacuities.	**34. Sternum unnotched posteriorly; very small costal processes; *no* manubrium; comparatively a much deeper carina; sternal body and keel never perforated by vacuities.**
35. 12 cervical vertebræ without free ribs; 13th and 14th vertebræ possess freely suspended ribs; while from the 15th to the 19th inclusive they are *true dorsal vertebræ* (5 for this species), connected with the sternum by costal ribs.	**35. 13 cervical vertebræ without free ribs; only the 14th vertebra possesses a freely suspended rib; while from the 15th to the 17th inclusive they are *true dorsal vertebræ* (only 3 for this suborder of birds!), connected with the sternum by costal ribs.**
36. The last sacral vertebra is the 29th.	**36. The last sacral vertebra is the 27th.**

These last few comparisons simply go to show that in the plan of the SPINAL COLUMN, PELVIS, and RIBS, a typical Swift differs very materially from a Humming-bird. It is possible that Mr. Ridgway does not consider such differences as these to be "definite differences." How is it, then, that the *spinal column, pelvis,* and *ribs* in a Swift agree so nearly with the corresponding parts of the skeleton in almost any species of Swallow? Does not the significance of such facts bring any meaning to Mr. Ridgway's mind?

CYPSELI.	TROCHILI.
37. Furcula a very broad U-shaped one, with lateral abutments at its heads, and with rudimentary hypocleidium, the bone harmoniously proportioned with the rest of the skeleton.	**37. Furcula rather of a very broad V-shaped variety, with small lateral abutments at its heads, and with rudimentary hypocleidium, with the bone of hair-like dimensions as compared with others of the skeleton.**
38. Coracoids much the same form as we find them in the Swallows.	**38. Coracoids very peculiar, as the tendinal canal is closed by bone, and the shaft is perforated by a large foramen below it. *Totally* unlike this bone in the *Cypseli*.**

39. Blade of scapula nearly straight.	39. Blade of scapula bent at a marked angle at its posterior extremity.

That there is a superficial resemblance in the sternum and furcula of a Swift to the corresponding bones in the skeleton of a Humming-bird can signify but little when we find such real and radical differences in the other bones of the shoulder-girdle. In the first place, as exhibiting affinities, the coracoid is a far safer bone to rely upon than the furcula, and of the latter I have elsewhere said "Swifts are birds of long-sustained flight, Humming-birds are great fliers, and so are Albatrosses; and were we to increase in size the furcula of a Swift and a Humming-bird to the size of that bone in an Albatross, we should be surprised to find how much they resemble each other." Finally, in the vast majority of birds, the pelvis is just as good a bone of the skeleton to decide kinships as is the sternum, although the latter bone, *from an inveterate habit,* is much relied upon. The *availability* of the sternum has had much to do with this. It is easily cleaned; often saved by taxidermists; and its *notches* are easily counted.

Finding the skull and trunk skeleton so very different, *fundamentally* different, we now pass with considerable confidence to the skeleton of the limbs *.

CYPSELI.	TROCHILI.
40. *Humerus* may or may not be pneumatic; radial crest claw-shaped, produced and curved towards humeral head of the bone. General characters of the bone on the passerine plan, but profoundly modified.	40. Humerus always pneumatic (?), with the pneumatic fossa and foramina *on the radial side of the bone!* Radial crest not produced, but *truncated.* Ulnar crest has the appearance of a powerful decurved claw. A very peculiar, characteristic, and remarkably twisted bone. *Quite unique.*

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* Shufeldt, R. W. For figures of the anatomical structure of the Swifts, Swallows, Humming-birds, and many other types, see (1) my paper published in the Linnean Society's Journal—Zoology (London), vol. xx. pp. 299–394, plates 17–24. (This paper has already been mentioned above.) (2) In the P. Z. S. 1885, pp. 886–915, pls. lviii.–lxi. (3) P. Z. S. 1886, pp. 501–503. (4) On the Tongue in the Humming-bird, 'Forest and Stream,' vol. xxviii no. 25 (New York), July 14, 1887, p. 531.

41. *Ulna* proportionately *longer* than it is in the *Trochili* as compared with the humerus. It has a character of its own, not especially trochilidine.	41. *Ulna* proportionately *shorter* than it is in the *Cypseli* as compared with the humerus. It has a character of its own, not especially cypseline.
42. *Radius* markedly straight.	42. *Radius* markedly bowed or curved.
43. *Carpo-metacarpus* very stout in proportion; index metacarpal *longer* than that of medius, which latter is *curved* along its entire length.	43. *Carpo-metacarpus* proportionately much longer than in the Swifts; index metacarpal *shorter* than that of medius, which latter is *straight* along its entire length.
44. Distal joints of index present several minor, though good differential, characters. (See plate lxi. P. Z. S. 1885.)	44. Distal joints of index present several minor, though good, distinguishing characters. In *Micropus* and *Trochilus*, for example, the distal joints of the manus are morphologically strikingly dissimilar.

There are two or three sesamoidal bones to be found in the arm of a Humming-bird that do not occur in the Swift; but that is a small matter compared with the many and absolute differences that actually exist in the skeleton of the pectoral limb in representatives of these two suborders of birds. Were it possible to have the skeleton of a Humming-bird as large as the skeleton in a good-sized Gull, and the skeleton of a typical Swift of an equal size, and then compare them, these really marked differences in the two groups would at once be apparent to the eye. So far as those differences are concerned in the humerus in the various kinds of birds of which we have been speaking, they show very well in some figures which I published in the 'Proceedings of the Zoological Society of London' in 1886, and reproduce here in order to better illustrate my meaning.

In both *Cypseli* and *Trochili* the humerus *is short*, but so far as *proportionate lengths* are concerned in the brachium, antibrachium, and manus they by no means agree in the representatives of the two suborders. Be this as it may, it is nothing to me here, for I am now dealing with *characters*, and not attempting to solve a problem in arithmetic. In this connection it is worthy of mention,

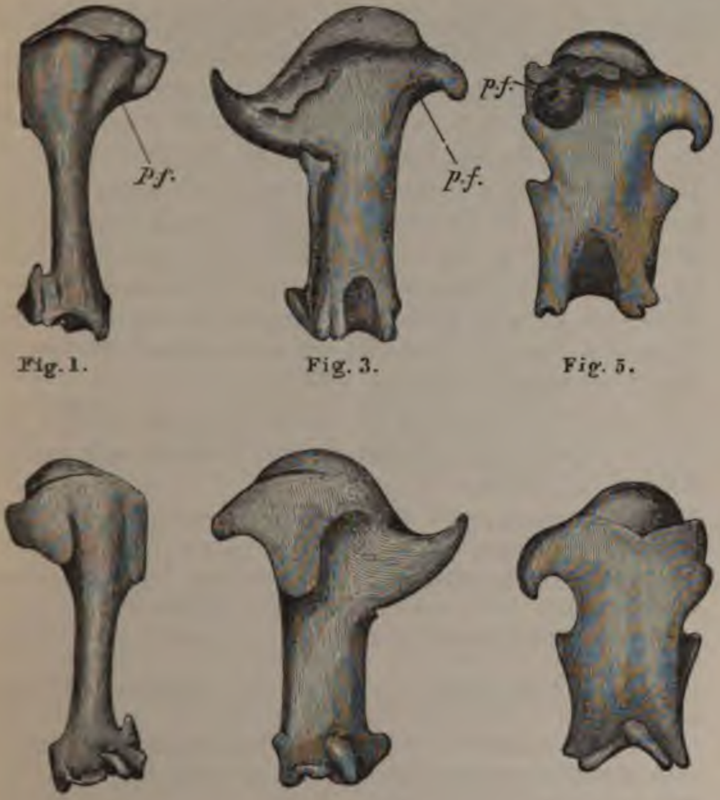

Fig. 1. Fig. 3. Fig. 5.

Fig. 2. Fig. 4. Fig. 6.

Comparison of the Humeri of the Swallow, Swift, and Humming-bird. (P. Z. S. 1886, p. 502.)

Fig. 1. Anconal aspect of left humerus of *Tachycineta thalassina*. ×3.
Fig. 2. Palmar aspect of the bone shown in fig. 1. ×3.
Fig. 3. Anconal aspect of the left humerus of *Micropus melanoleucus*. ×4.
Fig. 4. Palmar aspect of the bone shown in fig. 3. ×4.
Fig. 5. Anconal aspect of the left humerus of *Trochilus alexandri*. ×8.
Fig. 6. Palmar aspect of the bone shown in fig. 5. ×8.

By "anconal" I mean that side of the bone which is next to the body of the bird, and the reverse of this is the "palmar" aspect. All these figures are drawn from the specimens by the author, and *p.f.* calls attention to the *pneumatic fossa*.

however, that Professor Huxley, who has carefully examined the skeletons of Swallows and Swifts with the view of comparing the relative lengths of the arm-bones in them, has said, "No distinction can be based upon the proportions of the regions of the fore limb, since in all the Swallows which I have examined the manus and the antibrachium, respectively, greatly exceed the humerus in length, though the excess is not so great as in *Cypselus*" (P. Z. S. 1867, p. 456). It is no wonder that Professor Huxley, at the conclusion of his researches in such fields, was prepared to say that "the Cypselidæ are very closely related to the Swallows among the Coracomorphæ" (*loc. cit.* p. 469).

Passing to the skeleton of the PELVIC LIMB, we find no trouble in selecting a number of very "definite osteological differences," for in—

CYPSELI (*Micropus*).	TROCHILI (*Trochilus alexandri*).
45. Skeleton of the pelvic limb is characteristic.	45. Skeleton of pelvic limb not especially characteristic.
Distal end of *tibio-tarsus* peculiarly twisted.	Distal end of *tibio-tarsus* normal.
46. Pro- and ectocnemial ridges *not* developed.	46. Pro- and ectocnemial ridges rudimentary.
47. Patella *absent*.	47. A large patella present.
48. *Fibula* does not extend below the fibular ridge on tibia (as in *Conurus*).	48. Not peculiar.
49. Hypotarsus of *tarso-metatarsus* containing one deep groove to pass the tendons.	49. Hypotarsus of *tarso-metatarsus* both *pierced* and grooved for tendons.
50. Joints of *pes* abnormal, being 2, 3, 3, 3, and, upon the whole, the skeleton indicating a very weak foot.	50. Joints of *pes* normal, being 2, 3, 4, 5, and, upon the whole, the skeleton indicating a good, strong foot for the size of the bird.

So, instead of *Cypseli* and *Trochili not* exhibiting any "definite osteological differences" in their pelvic limbs, there appear to be some very radical ones.

Were we to meet with the fossil remains of the pelvic limb of a specimen of *Micropus melanoleucus*, and the same of a *Trochilus*, standing clearly out in their stony matrix, with all their characters in view—tell me, where could we find the ornithologist, guided by such data alone, who would restrict them to the same *family*?

Upon examining and comparing the anatomy of the "soft parts" in Swifts, Swallows, and Humming-birds, we at once meet with numerous differences of the most decided character in the case of the first and last mentioned, as comparison will show.

CYPSELI.	TROCHILI.
51. In the arm, the *tensor patagii brevis* muscle is thick and quadrilateral in form, and is inserted *directly* upon a tendinous fascia on the surface of the *extensor metacarpi radialis longior* (see fig. 28, pl. 22, Journ. Linn. Soc., Zool. (Lond.), vol. xx.	51. In the arm, the *tensor patagii brevis* muscle is thick and *conical* in form, and is inserted upon a *special* tendon, which latter passes to the carpus for insertion. Otherwise peculiar. (See Garrod, Coll. Sci. Papers, fig. 1, pl. xxiv., and my fig. 29 of Linnean memoir.)
52. Three pectoral muscles, all well developed.	52. Three pectoral muscles, *enormously* developed.
53. Insertion of *pectoralis major* essentially agreeing with that of the Swallows.	53. Insertion of *pectoralis major*, owing to absence of "radial crest," is inserted on shaft of bone.
54. *Pectoralis secundus* muscle inserted at the head of the humerus upon its anconal side, between the summit and radial crest or hook.	54. *Pectoralis secundus* muscle inserted at the distal margin of the pneumatic fossa, its tendon *crossing* the head of the humerus.
55. Arrangement of *plantar tendons of pes* peculiar, and differing entirely from that of the *Trochili.* (See Garrod, Coll. Sci. Papers, p. 294, and Shufeldt, Linn. Memoir, p. 374.)	55. Arrangement of *plantar tendons of pes* much as we find them in the *Passeres*; quite different from the *Cypseli*, and with a very "definite difference."
56. Carotid artery single (except in *Cypseloides*!), and arising from the aorta at a considerable distance from the median line.	56. Carotid artery single (no known exceptions), and arising from the aorta not far from the median line.
57. Heart (in size), in proportion with the bird, *short*. (See Linnean Soc. Mem. figs. 35 and 36, pl. 23, vol. xx.)	57. Heart of enormous size in proportion with the size of the bird, markedly *long*.
58. Trachea and bronchial tubes normal and *entirely different* from what we find in the *Trochili*, being more like those parts in the Swallows.	58. Trachea and bronchial tubes almost unique (their counterpart seen only [?] in *Ajaja*!). (See Journ. Linn. Soc. fig. 33, pl. 23, vol. xx.)

59. *Two* pairs of syringeal muscles; *sterno-tracheales* being *present*. Musculature of the syrinx differing *entirely* from anything seen in the *Trochili*.	59. Several pairs of syringeal muscles (Macgillivray); *sterno-tracheales absent* (rare in birds). Entire syrinx and its muscles different from those of any known Swift.
60. Morphology of the *liver* agreeing in the main with the Swallows.	60. Morphology of the *liver* quite different from that of the Swallows. Lobes so disposed as to entirely hide the other abdominal viscera when viewed upon the ventral aspect.
61. Morphology of the *entire* digestive tract agreeing in the main with that of the *Passeres*, and especially the Swallows.	61. Morphology of the *entire* digestive tract strikingly peculiar. Intestine of comparatively large calibre and proportions; stomach *remarkably reduced* in size; rectal cloaca bulbous.

It is a fact that intestinal cæca are absent in both *Cypseli* and *Trochili*, but they are also present in some Parrots and absent in others of the same group. As a character, it would seem, these organs are not of any very great classificatory value.

The comparative notes presented in the present paper have been carefully selected from my former writings upon this subject, and a reading of what has been written about Swifts, Swallows, and Humming-birds for the last five years, and, finally, based on a critical examination of much additional material. It will be seen that I have selected only 61 anatomical points, but they are each and all points of "definite difference," and to my mind clearly establish the fact that the *Cypseli* and *Trochili* are not, morphologically speaking, related groups of birds. It will further be seen that the structures selected for comparison have been found in nearly every system of the economy, and there can be no doubt that by the aid of the dissecting-lens many others would come to light.

It gives me pleasure to submit these 61 important structural differences existing between the *Cypseli* and the *Trochili* to the thoughtful systematist in ornithology, confident as I am that after their weight has been duly appreciated there will no longer be any doubt in his mind that not only is a typical Swift a widely different kind of bird from a Humming-bird, but that in reality, after all, the Swifts are but greatly modified Swallows, as so much in their structure undoubtedly indicates.

VIII.—*Notes on Collecting in Kona, Hawaii.*

By R. C. L. Perkins, B.A.*

The district of Kona embraces a considerable portion of the western side of Hawaii, and includes portions of the two mountains Mauna Loa and Hualalai. The lower slopes up to 1500 or 1600 feet have few forest-trees, save, here and there, the *kukui* and *lehua*; they are mostly covered with dense masses of the introduced lantana, the guava, and especially near the coast with prickly pear or cactus.

From about 1700 to more than 3000 feet the forest has a distinct character. It consists mainly of the *lehua*-tree, which here is of an enormous size and height, the *koa*, and several other trees of smaller size. On the rough lava-flows these trees are thickest and most luxuriant; in the spaces between the flows they have largely been destroyed by the cattle, and these spaces, which are up to about 3000 feet waist-deep in the hilo grass, more resemble English park-land than thick woods. Tree-ferns, which were once very numerous, are now much scattered in these spaces, but are more plentiful on the lava. That cattle destroy them is certain, for in dry seasons they are cut up by the natives for the purpose of feeding their animals.

Both on the rough flows and in the more open country the *Freycinetia* (*ieie*) climbs high up the trees, but except on the roughest lava it shows no leaves or flowers for a considerable height, the cattle eating off the shoots as high as they are able to reach. Even in the now open grass-covered land not many years ago the trees were all united by the *ieie* vines, while the tree-ferns were in profusion as low as 1400 feet. Of the smaller trees mentioned above (some of which are still found in the open, though they are most luxuriant on the rough lava) the following are predominant:—The *opiko*, a broad-leaved tree of considerable size, which is largely destroyed by the cattle; the *olomea*, with red-veined leaves; the *mamaki*, from which the natives used to make their kapas; the small-leaved *kolea*, and the *papala*, from which they obtained their bird-lime.

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* Communicated on behalf of the Joint Committee appointed by the Royal Society and the British Association to investigate the Zoology of the Sandwich Islands.

Somewhere between 3000 and 4000 feet there is a decided change in the flora, and at the same time the fauna also changes. The rough-barked *koa* and another smooth species of acacia still abound, or rather increase in numbers, while the bastard sandal (*aaka*) grows in profusion, and the true sandal less abundantly. The *mamane*, with its yellow blossoms prolific in insects, is very numerous, and also the *alii*, on which I several times saw feeding the beautiful little orange-coloured *Loxops* ("*Akakani*"). On the rough lava-flows the *maile*, from which are made "*leis*" (or wreaths), grows here and there, but has largely been eaten and destroyed by the cattle, and probably will shortly disappear altogether in this locality. It exudes a white juice, and when the young shoots are taken and the peel and leaves stripped off entire, as is done in making the "*leis*," the scent is very sweet, much like that of a hay-field. The flat table-land between Hualalai and Mauna Loa is nearly bare of trees, but produces the *ohelo* or native strawberry, the *pukiawe*, with red or white berries, and a creeping plant called *ulei* with white blossoms. The Cape gooseberry or *poha*, with yellow flowers attractive to the honey-bee, grows luxuriantly both above and below 4000 feet. It has a round acid fruit, the size of a cherry, from which excellent jam and jelly are made. A large proportion of the insects are restricted to one or other of these two distinctly-marked regions, and this is also the case with some birds. The *Oo* (*Acrulocercus nobilis*) appears to belong to the lower district only, the Finches *Chloridops*, *Rhodacanthis*, and *Psittacirostra*, and the short-billed *Hemignathus* to the upper. The long-billed *Hemignathus* is found in both districts, while *Chasiempis* and *Phæornis* range from the lowest to the highest limits of the forest proper.

These western slopes of Mauna Loa may be truly called a bird-paradise. If one excludes those of our own birds which go in *large* flocks, I doubt whether there is any place in England so prolific in individuals, though the *species* here are of course limited in numbers. At about 4000 feet both species and specimens reach their maximum. Most abundant and widely-ranging of the Finches is the "*Ou*" (*Loxioides bailleui*). This bird often goes in little companies and wanders quite below the true forest, being partial to the large *kukui* trees. It has a somewhat sweet song, which at times reminds one of the Canary, and frequently several will sing in concert. I have noticed that it often sings while on the wing. It belongs strictly to the lower of the two districts that I have mentioned, for its food is mainly the red flower of the *ieie*, but in the interval between the decay of the old blossoms and the opening of the new many specimens strayed, even up to 4000 feet, into the haunts of *Psittacirostra*, when the song of both might be heard in the same locality. The *Ou-po-papale* (*Psittacirostra psittacea*) is confined to the upper forest, where its chief food (the beans of the *mamale*) is found; its song is pleasing, but to me less so than that of the *Ou*. I have found by dissection that it is also largely insectivorous, being particularly fond of lepidopterous larvæ. In one case I found an adult male crammed with examples of a brilliant yellow, black, and green larva of moderate size which feeds on the *mamane*, and would certainly be regarded as possessing in the highest degree the so-called "warning colours." This species ranges to a considerable height up the mountains. I noticed it on Hualalai up to about 6000 feet.

The *Koa* Finch (*Rhodacanthis palmeri*) is the largest and most beautiful of all the Hawaian Finches. It frequents the tallest and most leafy acacias, both when growing on the roughest lava-flows and in the grassy openings in the forest. It belongs entirely to the upper forest, and is probably most numerous at about 4000 feet. Its peculiar whistle, though not very loud, is very clear, and can be heard for a considerable distance. If imitated closely it will readily answer, and sometimes, after fruitless hunting for hours without even hearing a sound from this bird, a whistle has been immediately responded to. At other times a distant bird has been drawn close by the imitation of its whistle and easily secured. It devours the beans of the acacia, and these it swallows in very large pieces. I think that the enormous development of the abdominal portion of the body must be connected with this habit. I have seen both male and female feeding the full-grown young, and as I could find nothing but the large pieces of *koa* bean in the latter, I conclude that the young are fed on pieces similar to those swallowed by the parents, without mastication. The young male soon acquires the peculiar whistle, for I have shot one in almost perfect song in quite immature plumage and with the skull still cartilaginous. It does not restrict itself to the *koa* bean, but varies its diet by feeding on lepidopterous larvæ, just as the *Psittacirostra* does; for this purpose it generally descends into the *aaka* or bastard sandal-wood trees, and, as was the case with that bird, I have found in the crop of *Rhodacanthis* larvæ with conspicuous "warning" colours. When it has been feeding on the *koa* beans its bill is often much stained with their green juice and green fragments. The female I have heard to utter a rather deep single note when alarmed. On one occasion when I had shot a male I heard his mate repeatedly utter this note, and she continued to do so for some five minutes, but seemingly possessed some ventriloquial power—the sound seeming now in front, now behind, now near, now far; yet it was utterly impossible that the bird could have flown without my being aware of it. At last the bird became silent, and I never caught sight of it at all.

The *Palila* (*Chloridops kona*), though an interesting bird on account of its peculiar structure, is a singularly uninteresting one in its habits. It is a dull, sluggish, solitary bird, and very silent—its whole existence may be summed up in the word "to eat." Its food consisting of the seeds of the fruit of the *aaka* (bastard sandal-tree, and probably at other seasons of those of the sandal-wood tree), and as these are very minute, its whole time seems to be taken up in cracking the extremely hard shells of this fruit, for which its extraordinarily powerful beak and heavy head have been developed. I think there must have been hundreds of the small white kernels in those that I examined. The incessant cracking of the fruits when one of these birds is feeding, the noise of which can be heard for a considerable distance, renders the bird much easier to get than it otherwise would be. It is mostly found on the roughest lava, but also wanders into the open spaces in the forest. I never heard it sing (I once mistook the young *Rhodacanthis*' song for that of the *Chloridops*), but my boy informed me that he had heard it once, and that its song was not like that of *Rhodacanthis*. Only once did I see it display any real activity, when a male and female were in active pursuit of one another amongst the sandal-trees. Its beak is nearly always very dirty, with a brown substance adherent to it, which must be derived from the sandal-nuts.

Of the *Drepanididæ* the rarest species was *Loxops coccinea*. I saw only the adult and young male, and these were mostly feeding on insects either amongst the blossoms of the *alii* tree or on the foliage of the acacias. Their habits seemed almost identical with those of the yellow species of *Himatione*. I never heard any proper song, nothing more than a squeaking like that of the female *Himatione*. On several occasions it was in company with the small straight-billed *Himatione*; on two of these I saw it pursue the latter from tree to tree, and on another the *Himatione* was itself the aggressor. On one of these occasions I shot the green bird, and it was beyond doubt the *Himatione*, and not a green female of *Loxops*. *Loxops* is apparently confined to the upper forest.

Both the green species of *Himatione* are abundant in Kona, that with the curved bill (*H. virens*) especially so, and particularly in the higher forest. However, it ranges down in some numbers even as low as 1400 or 1500 feet. The straight-billed species*, on the other hand, I failed to notice in the lower forest, though it was common enough at 4000 feet, nor did the male appear to assume a bright yellow plumage as in the other species. They are chiefly insectivorous, feeding on lepidopterous larvæ and other insects, but the curved-billed species is in places very partial to the *lehua* flowers, as on Oahu. On the rough lava, on which this tree grows abundantly, at the foot of the Hualalai, where the mountain rises suddenly from the table-land, I frequently observed them sucking the honey of these blossoms, and, in company with *Himatione sanguinea*, on the same tree, certainly as high as 7000 feet up that mountain—at an altitude where in the morning the ground was covered with hoar-frost.

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* *H. mana*, S. B. Wilson, Ann. & Mag. N. H. ser. 6, vii. p. 460 (1891).

But, besides feeding amongst the foliage and flowers, both these birds are very commonly seen to feed on the trunks and branches of trees living and dead, picking off the insects and tapping at the bark and rotten wood. The yellow species also comes down to feed on the *poha* plants. Whether it eats the fruit I cannot say; it is more probable that it feeds on the insects (*e.g.* a species of *Brachypeplus*) that are found in the fruits of this plant; but, on the other hand, it is possibly the holes in the fruit that attract the beetles, for these holes are generally larger than the size and number of the beetles would account for. I have seen the nest in several trees, and at very different heights in these trees. It is lined with roots, and has many fruit-capsules of the *poha*, dry and more or less skeletonized, woven in the outside.

Vestiaria coccinea is extremely common and wide-ranging, far more so than the crimson *Himatione*, which seems to prefer the higher forest. The *Vestiaria* even comes into the lots in front of the houses, visiting the peach and rose trees, and on one specimen, which was knocked over by a native girl with a stone while visiting the latter blossoms and brought to me, I found several specimens of a flattened parasitic fly, perhaps identical with the smaller of the two found on the Owl. At any rate, in form it is superficially quite the same sort of thing.

But of all the birds of Kona the most interesting in habits is the shorter-billed *Hemignathus* (*H. obscurus*). The mere sight of so extraordinary a form could hardly fail to awaken in any one a keen desire to witness the manner of its feeding, and this I have many times been able to accomplish. It is a common bird from rather below 4000 feet to some hundreds of feet above that altitude, and most probably much higher still. It is most partial to the larger acacias, running up and down the limbs and trunks with equal ease, and also both on the upper and lower surfaces of the branches. It was on the 11th of July, soon after my arrival at a sufficient altitude for this bird, that I first saw one, a fine bright male, feeding. When I first caught sight of it it was some ten yards off; but I easily got closer without scaring it in the slightest. Being bare-footed and bare-legged at the time, and the ground being overgrown with a very prickly introduced thistle, after following it for half an hour I found my feet somewhat painful. Meanwhile the bird kept straying over the fallen trunks, turning its head, now right, now left, in its desire for food. In this manner it searched both sides of the tree in one journey without retracing its steps. And this is how it uses its bill:—The upper mandible it plunges into the small holes or cracks in the wood, while the lower presses on the surface of the bark. By this means, I imagine, it gets a considerable leverage to help it in opening out the burrows of the insects. In the same way it thrusts its upper bill under the loose bark, resting the lower one on the surface, and in this way strips the bark off. The upper mandible, though so thin, is very strong and somewhat flexible; while the curve of the bill follows the curve of the burrow, for insects nearly always burrow more or less in a curve. Should the curve of the burrow not agree with the curve of the bill, the difficulty is overcome both by the slight flexibility of the beak and by the wonderful flexibility of the bird's neck, which it twists round so as to bring the curve of the bill to follow that of the burrow. In this manner it gets out its prey, being largely aided by the long tongue, which is as long as the upper beak. Every now and then it gives several blows to the trunk, the sound of which may be heard at a considerable distance, sometimes, I think, to frighten out its prey to the entrance of the burrow, sometimes for the purpose of actually breaking the wood.

I had several other opportunities of observing this bird when feeding, afterwards; the blows that it gives to the trunk and branches are dealt with great vigour and with the beak wide agape, so that the points of both mandibles come in contact with the surface. One hot morning, shortly before I left Kona, I watched one of these birds for some time lying on a branch of the *mamane* and basking in the sun. Now and then it would lazily turn and peck at the bark without changing its position. Suddenly it started up and commenced to feed in earnest, dealing blows with savage energy. Into these blows it throws its whole weight, swinging backwards from the thighs to renew each stroke. In some cases at least these blows are for the purpose of driving out insects, or at any rate have that result; for several times I saw the bird after a stroke make a sudden dart, sometimes even taking an insect on the wing, and, after swallowing it with evident satisfaction, return again to its labour. Its song is short but rather pleasing, and, as one would expect from its habits, full of life and energy.

The long-billed species (*Hemignathus olivaceus*) is also an interesting bird, as in its habits it is intermediate between *Himatione* and its short-billed relative. *Himatione* mainly feeds on insects amongst the leaves and flowers of the forest trees, but not infrequently pecks at the bark in true Woodpecker style. In the long-billed *Hemignathus* this mode of feeding becomes much more usual, and its tapping may often be heard in acacia and other trees; still it feeds largely on insects amongst the leaves of the *lehuas*, &c., while the short-billed species has almost entirely assumed a Woodpecker's habits. This bird is by no means confined to the lower forest, but extends its range right up into the haunts of the short-billed bird, where they may be seen even in the same tree. I rarely heard it sing. Its song reminded me somewhat of that of the yellow *Himatione*, but was distinct enough.

And here it will be appropriate to notice the scent emitted by so many and so different species of Hawaiian birds. I cannot liken this scent to any other that I know; but I should certainly call it disagreeable. In *Himatione* it is strongest of all, so much so that when a small company of these birds was overhead in the trees the whole air was often full of it; both my native assistant and myself noticed it again and again. Certain nests I could readily recognize as belonging to *Himatione* by the overpowering scent that still clung to them after the young had flown. It may also be noticed in *Hemignathus, Loxioides, Psittacirostra, Chloridops,* and *Rhodacanthis*; in some specimens much more strongly than others, in some perhaps not at all. Whether the red birds *Loxops, Vestiaria,* and *Himatione sanguinea* possess it I have not noticed. It is absent from the birds related to the Australian forms—the *Oo, Chasiempis,* and *Phæornis.* How this scent, exactly the same in quality, comes to be attached to the insect-eating *Drepanididæ,* and to such species as *Chloridops kona,* which appears to live entirely on the seeds of the fruit of the sandal-trees, I cannot imagine.

In the lower forest the *Oo* (*Acrulocercus nobilis*) was a common bird, frequenting, as is well known, the lofty *lehua*-trees, especially when growing on the rough lava. Save its antipathy to the red birds (*Vestiaria*), its habits are difficult to observe, as it usually keeps very high up in the trees. Its peculiar cry, rather more like "ow-ow" than "oo," is very curious, and it would readily respond and even approach when I imitated its voice. The young bird is without the tufts of yellow feathers beneath the wings. I strongly suspect it builds in holes in the trunks of the *lehua*-trees at a great elevation, as my native assistant and a white boy, who was with him at the time, assured me that they saw one of these birds enter such a hole two or three times, but that they could not possibly climb up, though they made the attempt. This was about the middle of June—at the same time that I obtained the young, which certainly had not been long out of the nest.

The single species of *Chasiempis* (*C. sandwichensis*) found in Kona is one of the commonest birds, extending its range from about 1400 feet to the limits of proper forest on Mauna Loa, and also high up Hualalai. It is a pretty species, with great difference in colour between the young and the old; in this respect resembling the Oahuan species, in both cases snowy-white feathers in the adult taking the place of rufous feathers in the young. On one occasion I obtained a *rufous* female along with the ordinarily coloured male and their young, just out of the nest; but this I believe to be a very unusual circumstance, the female probably being a young specimen breeding before it had assumed adult plumage. The male was quite typical. The adult female closely resembles the male, but the latter is black under the gorge, and I believe the feathers there become blacker in the breeding-season, just as the hackles of our common Starling lose their white tips at this season, but the change is less marked in *Chasiempis*. I have no doubt all the Kona birds belong to one species, the rufous birds nearly always having an entirely or partially unossified skull. These birds live chiefly on insects and their larvæ. The insects they often take on the wing, their beaks closing with a very audible snap, often nearly as loud as the "cracking" of *Chloridops*. They frequently descend to the ground or on to fallen trees, where they get wood-boring larvæ or small myriapods. With reference to this habit I had the following anecdote from a native woman in Kona:—"Of all the birds the most celebrated in ancient times was the *Elepeio*, and for this reason. When the old natives used to go up into the forest to get wood for their canoes, when they had felled their tree the *Elepeio* would come down to it. If it began to peck it was a bad sign, as the wood was no good, being unsound; if, on the contrary, without pecking, it called out '*Ona ka ia*,' 'Sweet the fish,' the timber was sound." The names *Elepeio* and *Ona ka ia* (pronounced *ŏnŏkăiă*) are both creditable word-imitations of the cry of *Chasiempis* under various emotions, here presumably of disgust.

Phæornis obscurus, though a dull-coloured species, is an interesting bird and by far the finest songster of any that I have so far met with in the islands. Its song somewhat resembles that of our Thrush, but it also utters many curious sounds under different emotions. Especially noticeable are a deep gruff single note, and a noise somewhat approaching to a hiss. Were it not for Dr. Gadow's investigations* I should have considered it a close ally to *Chasiempis*, which, instead of developing in colour, has developed entirely in voice. In many of its habits it differs from *Chasiempis* in degree rather than in kind. Some of their sounds uttered on disturbance are very similar, though generally deeper in *Phæornis*. Both assume exactly similar positions when disturbed, with upright tail and down-drooped wings. Instead of the shivering wings of *Phæornis* you see a quicker, more jerky movement in *Chasiempis*; but only the day before I left Kona, I saw the latter put on a genuine shiver exactly like that of *Phæornis*, and the position in both species while these movements are performed is, as above stated, exactly the same. Both live on insects and catch them in a similar manner. I have seen *Phæornis* take them when on the wing just like *Chasiempis*. It would be interesting to compare the young of the two genera together, for so far as I can see from a single old and badly preserved, but evidently immature, specimen of *P. lanaiensis* in the Bishop Museum, this species shows reddish spots very similar to the young of *Chasiempis*. Of *Chasiempis* I have several times found the nest (without eggs, unfortunately). It is small, very neat and compact, placed from 10 to 30 feet from the ground, and generally well concealed. That of *Phæornis* I have not found, though the bird is so common. The burst of song which *Phæornis* gives forth on the wing, usually when descending from the top of a lofty tree to a lower, is very striking, and different individuals sing in turn, quite evidently in rivalry of each other.

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* *Cf.* 'Birds of the Sandwich Islands,' by S. B. Wilson and A. H. Evans, part ii.

The Hawk (*Buteo solitarius*) is common on Mauna Loa, extending its range from near the sea-level to high up the mountains. It preys on mice (apparently the common house-mouse). I have taken as many as five large ones from a single bird. When thus gorged it can scarcely be made to move, and it is hardly possible to scare away the old from the vicinity of their young.

The Crow (*Corvus tropicus*) chiefly belongs to the lower forest, where it feeds largely on the *ieie* flowers, more especially, I think, when decayed. In the interval between the disappearance of the old and the opening of the new flowers this bird came up the mountains in large numbers, often even as high as 4000 feet, where they fed freely on the fruit of the *poha*. With the opening of the fresh flowers of the *Freycinetia* they disappeared again.

As on Oahu, many of the birds in Kona had swellings on the legs and feet; in some cases they had even lost one or more claws and parts of the toes. The species affected were *Himatione*, *Hemignathus*, *Chasiempis*, *Loxioides*, and *Rhodacanthis*. It is probably, I think, the result of damp, as in almost every case the birds affected were those shot within the rain-belt, while those above, even of the same species, were almost if not quite always free.

IX.—*Descriptions of Three new Birds from the Sandwich Islands.* By the Hon. WALTER ROTHSCHILD.

Fam. DREPANIDIDÆ.

1. HEMIGNATHUS AFFINIS, sp. n.

This bird is very closely allied to *H. hanapepe*, of Kauai, but differs in having the head, throat, and upper breast more golden yellow, and the back, rump, and upper wing-coverts dull olive colour instead of greenish yellow. Moreover, in *H. affinis* the yellow of the head terminates abruptly at the occiput, while it gradually passes into the colour of the back in *H. hanapepe*. The anal region and under tail-coverts are yellowish green, whilst in *H. hanapepe* they are white. Total length about 5 inches, wing 3·05, tail 2, tarsus 0·85, culmen 1·2.

Hab. Island of Mauai, Sandwich group.

2. LOXOPS OCHRACEA, sp. n.

The male of this very distinct species differs from *L. coccinea* and *L. flammea* in its dull ochraceous colour on the upper parts, fading into yellowish chestnut on the lower breast and ventral region. Under tail-coverts dull orange-yellow, tail-feathers plumbeous, edged externally with ochraceous yellow. Total length about 4 inches, wing 2·5, tarsus 0·75, culmen 0·4.

The female is very similar to that of *L. coccinea*, but on the upper surface is of a more blackish-green colour, and on the underparts of a more olivaceous and dingy colour. Tail more blackish than in *L. coccinea*, and the pale greenish edges of the feathers less conspicuous.

Hab. Island of Mauai.

To prevent confusion I append the description of the hitherto undescribed first plumage of the male of *L. coccinea*, of the island of Hawaii :—

Head, back, and rump deep sepia-brown, slightly flushed with red, becoming more conspicuous on the rump; throat, breast, and ventral region salmon-coloured; thighs pinkish brown; tail and wings blackish brown, each feather edged with dull red.

Fam. MELIPHAGIDÆ.

PALMERIA, gen. nov.

This genus is nearest to *Acrulocercus*, but differs from it in the three following points :—

(1) The tail is square and has no elongated central tail-feathers.

(2) There is a heavy crest of long curled feathers on the forehead, much like the crest of certain species of *Sturnopastor*.

(3) The beak is straighter, much shorter, and more pointed than in *Acrulocercus*, and in this respect *Palmeria* more nearly approaches my genus *Viridonia* (Ann. N. H. ser. 6, vol. x. p. 112, 1892).

3. PALMERIA MIRABILIS, sp. n.

Curled feathers of the forehead greyish white; top of head with a crest of long and very narrow feathers of a dark grey colour, faintly tipped with vermilion, which latter colour gradually increases till the feathers on the back of the neck and occiput are only grey at their basal half. Feathers on the shoulders, back, and rump dull greyish black, with a narrow greyish-white shaft-line, which at the tip of the feather forms a roundish subterminal spot, followed by a terminal spot of a dull yellowish pink. Tail and quills blackish, the latter with a white outer margin. Three innermost secondaries with broad white tips. Sides of the head and neck leaden grey. Round the eye is a broad circle of pale orange-pink feathers. Feathers of the breast leaden grey, with markings similar to the back, only the subterminal and terminal spots are much smaller. Abdomen almost similar to rump; thighs yellowish vermilion; under tail-coverts yellowish grey; bill and feet black. Total length about 6·75 inches, wing 3·5, tail 2·75, tarsus 1·25, culmen 0·75.

Hab. Island of Mauai.

X.—*Bulletin of the British Ornithologists' Club.* Nos. I.–III.

No. I. (Nov. 1st, 1892.)

The Inaugural Meeting of the British Ornithologists' Club took place at the Mona Hotel, Henrietta Street, Covent Garden, on Wednesday, October 5th, 1892.

Chairman: P. L. Sclater, F.R.S.

The following Members of the British Ornithologists' Union were also present:—E. Bidwell, W. T. Blanford, F.R.S., Philip Crowley, W. Graham, W. R. Ogilvie Grant, T. J. Monk, F. Penrose, Count T. Salvadori, Howard Saunders, W. L. Sclater, Henry Seebohm, Dr. R. Bowdler Sharpe, H. T. Wharton, and John Young.

Guests: Mr. E. Degen, Mr. W. P. Pycraft, Mr. Oldfield Thomas, Mr. A. Smith Woodward.

The Rules of the Club were discussed and settled. A Committee was appointed, consisting of Mr. E. Bidwell, the Earl of Gainsborough, Mr. H. Seebohm, and the Editor of 'The Ibis.' Mr. Howard Saunders was elected Secretary and Treasurer to the Club.

It was determined to hold a Meeting on the third Wednesday in every month from October to June inclusive, an abstract of the proceedings to be printed as soon as possible after each Meeting, under the title of the *Bulletin of the*

British Ornithologists' Club, and distributed gratis to every Member. Copies of this monthly 'Bulletin' will be published by *Mr. R. H. Porter*, 18 *Princes Street, Cavendish Square, W.*

Dr. R. Bowdler Sharpe was appointed Editor of the 'Bulletin.'

Mr. Edward Degen read a paper "On some of the main Features in the Evolution of the Bird's Wing," which was illustrated by diagrams and specimens. After having briefly summarized the pterylography of the wing, Mr. Degen invited attention to two small feathers in the carpal region, lying between the cubital and metacarpal remiges. These had been considered by Wray to belong, the upper to the median, and the under to the major row of coverts. But Mr. Degen had come to the conclusion that the so-called major covert was really a degenerated remex, whilst the "median" tectrix was neither more nor less than its major covert. In short, Wray's "rudimentary" major covert belonged to the remiges, and his "median" to the tectrices majores. Mr. Degen proposed to call the covert the "carpal covert," and the underlying feather the "vestigial remex." He further pointed out that hitherto the major coverts had been held to lie proximally to their respective remiges, whilst in reality the reverse was the case.

Finally, and as the result of the foregoing deductions, Mr. Degen advanced a theory with regard to aquincubitalism and the probable derivation of the cubital remiges from the 3rd and 4th metacarpo-digitals.

A discussion followed, in which Messrs. Sclater, Seebohm, and Pycraft took part.

No. II. (Nov. 1st, 1892.)

The first regular meeting of the Club was held at the Mona Hotel, Henrietta Street, Covent Garden, on Wednesday, October 19th, 1892.

Chairman: P. L. Sclater, F.R.S.

Members present:—E. Bidwell, W. Eagle Clarke, Philip Crowley, W. Graham, A. P. Loyd, St. George Mivart, F.R.S., H. J. Pearson, Robert H. Read, Count T. Salvadori, Howard Saunders, Henry Seebohm, Dr. R. Bowdler Sharpe, Capt. Horace Terry, W. B. Tegetmeier, J. T. Tristram-Valentine, Charles A. Wright, John Young.

Mr. Howard Saunders informed the Meeting that the number of Members who had joined the Club up to the 19th of October was 60.

Mr. Sclater announced that he had received for 'The Ibis' an excellent Memoir on the birds of the vicinity of Aden, prepared by Lieut. Henry E. Barnes, M.B.O.U., and lately attached to the Commissariat Department at Aden. It contained an account of 126 species of birds collected or observed in the vicinity of Aden. Mr. Sclater exhibited some specimens sent home by Lieut. Barnes from Aden for examination. Amongst these were examples of *Falco barbarus*, *Halcyon semicæruleus*, and *Coturnix delegorguei*, which last was stated to be equally abundant near Aden with *C. communis*.

Mr. Henry Seebohm exhibited some interesting species of birds procured by Mr. Holst in the 'Loo-Choo' or 'Liu Kiu' Islands. The collection would be fully described in the January number of 'The Ibis.'

Dr. R. Bowdler Sharpe called attention to a collection of birds recently received by the Natural History Museum from Mr. A. H. Everett, the well-known Bornean traveller. Among other interesting specimens Mr. Everett had sent skins of *Motacilla melanope* from the Baram River, and an adult of the true Peregrine Falcon (*Falco communis*), not the dark Sunda race, from Pappan Island, Labuan, where it was procured in February 1892. Among the migratory species of which examples had been sent by Mr. Everett was a specimen of *Emberiza pusilla*, new to the avifauna of Borneo. His brother, Mr. H. H. Everett, had procured the specimen in question at Tagora, in Sarawak, during the north-east monsoon.

From the island of Mantanani, Mr. Everett had also forwarded examples of both phases of a new Owl, which Dr. Bowdler Sharpe proposed to call

SCOPS MANTANANENSIS, sp. n.

S. similis *S. eleganti*, Cass., sed subtùs latiùs striatus, et tectricibus alarum conspicuè albo notatis distinguendus. Long. tot. 8·5 poll., culm. 0·8, alæ 6·2, caudæ 3·0, tarsi 1·25.

Hab. in insulâ Borneensi "Mantanani" dictâ. Typus in Mus. Brit.

Dr. Sharpe also proposed the following diagnostic characters for some new species recently discovered by Mr. Charles Hose on Mount Dulit, in Sarawak, Borneo:—

SCOPS BROOKII, sp. n.

S. similis *S. bourouensi*, sed fasciâ albâ latâ cervicali distinguendus. Long. tot. 9·5 poll., alæ 6·65.

ORIOLUS HOSII, sp. n.

O. niger, subcaudalibus castaneis. ♂ rostro nigro; ♀ rostro rubro. Long. tot. 8·0 poll., alæ 4·9.

BATRACHOSTOMUS MIXTUS, sp. n.

♂ *ptil. rufâ.* Similis *B. stellato* et tectricibus alarum eodem modo albo maculatis, sed subtùs rufus, pectore et abdomine minimè albicantibus et maculis pectoralibus magnis ovatis distinguendus. Long. tot. 8·0 poll., alæ 4·8.

♀ *ptil. brunneâ.* Similis *B. stellato*, sed subtùs vermiculatus et maculis magnis albis ovatis distinguendus. Long. tot. 8·0 poll., alæ 5·1.

In a communication received from Mr. W. R. OGILVIE GRANT a new species of *Caloperdix* was described as follows:—

CALOPERDIX BORNEENSIS, sp. n.

Similis *C. oculeæ*, sed pileo gulâque saturatioribus et magis ferrugineis, interscapulio nigerrimo, plumis lineis albis angustioribus et crebrioribus ornatis, et pileo rufo valdè definito distinguenda.

Hab. in monte Dulitensi provinciæ Borneensis "Sarawak" dictæ.

Mr. Grant likewise pointed out that the *Caloperdix* of Sumatra and Java differed from the typical Malayan form, and proposed to diagnose it as follows:—

CALOPERDIX SUMATRANA, sp. n.

Similis *C. oculeæ*, sed fasciis interscapulii dorsique pallidè flavis et ferè undique transversim irregulariter dispositis.
Hab. in Sumatrâ et Javâ.

In a communication received from Captain G. E. SHELLEY some new species of African Birds were described as follows:—

CINNYRIS NESOPHILUS, sp. n.

Similis *C. notato*, sed major; rostro valdè longiore, et gutture purpurascenti-violaceo distinguendus. Long. tot. 6 poll., alæ 2·9.
Hab. in insulâ "Angasija" vel "Great Comoro" dictâ. Typus in Mus. G. E. S.

ZOSTEROPS ANDERSSONI, sp. n.

Similis *Z. senegalensi*, sed valdè major et pallidior. Long. tot. 4·3 poll., alæ 2·35.
Hab. in terrâ Damarensi Africæ meridionalis. Typus in Mus. Brit.

PARUS XANTHOSTOMUS, sp. n.

Similis *P. nigro*, sed remigibus flavo marginatis, et ore intùs flavo distinguendus. Long. tot. 6 poll., alæ 3·15.
Hab. in terrâ Zambesianâ. Typus in Mus. G. E. S.

PARUS ROVUMÆ, sp. n.

Similis *P. albiventri*, sed notæo, tectricibus alarum minoribus et præpectore cinereis, minimè nigris, distinguendus. Long. tot. 6 poll., alæ 3·15.
Hab. prope flumen "Rovuma" dictum in Africâ orientali. Typus in Mus. G. E. S.

Dr. BOWDLER SHARPE exhibited the types of some of the new species of birds lately described by Mr. W. R. Davison in 'The Ibis' (1892, pp. 99–103), from the eastern coast of the Malayan Peninsula. Mr. Davison had very kindly submitted these specimens to Dr. Sharpe, who remarked as follows:—

"*Campophaga minor*, Davison, t. c. p. 99 = *Lalage culminata* of the 'Catalogue of Birds in Brit. Mus.' (iv. p. 104). Mr. Oates considers that *C. culminata* should be placed in the genus *Campophaga* (*cf.* Faun. Brit. Ind., Birds, i. p. 493).

"*Gerygone pectoralis*, Davison, t. c. p. 99 = *G. modiglianii*, Salvad. Ann. Mus. Gen. (2) xii. p. 71 (1891, Sumatra).

"This is a perfectly good species, and Mr. Davison has recognized its peculiar character, viz. the dusky horseshoe on the sides of the fore neck—a point equally insisted on by Count Salvadori. The name given by the latter gentleman has a slight priority, for it bears the date of the 23rd of December, 1891, while Mr. Davison's name appeared on the 1st of January, 1892.

"*Ptilocichla leucogastra*, Davison, t. c. p. 100 = *Trichostoma rostratum*, Blyth (*cf.* Sharpe, Cat. B. vii. p. 562).

"I have compared Mr. Davison's type with our series in the British Museum, and there is no question as to its being identical with the above-named species.

"The type of his *Malacopterum melanocephalum* was not sent by Mr. Davison, but the type of *Acridotheres torquatus* (*t. c.* p. 102), which I exhibit, shows that the species is a very distinct one, characterized at once by the broad grey band on the fore neck, separating the pinkish isabelline of the throat from the isabelline of the chest and underparts. It belongs to my subgenus *Æthiopsar*, and should be called *Æthiopsar torquatus*."

Mr. Davison had also sent a *Stachyris* from Pahang which was apparently new to science. Dr. Sharpe proposed to call it

STACHYRIS DAVISONI, sp. n.

Similis *S. borneensi*, rostro nigro, facie laterali et regione paroticâ pallide ochracescentibus, pectori concoloribus, distinguenda. Long. tot. 5·5 poll., alæ 2·25.

Captain G. E. SHELLEY sent for exhibition a series of birds from the collections recently made by Mr. Alexander Whyte, for Mr. H. H. Johnston, C.B., H.B.M. Commissioner for Nyassaland. These collections had been made on the Nyassa Highlands at Zomba and on the Milanji Plateau, and were of great interest, as showing the extension of the range of the South-African Fauna across the watershed of the Zambesi. Twelve species were new to science.

No. III. (Dec. 1st, 1892.)

The second regular meeting of the Club was held at the Mona Hotel, Henrietta Street, Covent Garden, on Wednesday, November 16th, 1892.

Chairman: Howard Saunders.

Members present:—F. E. Beddard, F.R.S., E. Bidwell, H. E. Dresser, A. P. Loyd, E. Neale, Robert H. Read, Capt. Savile Reid, Count T. Salvadori, Henry Seebohm, Capt. Horace Terry, E. Cavendish Taylor, H. T. Wharton, John Young.

Guest: Ernst Hartert.

The Chairman announced that the number of Members who had joined the Club up to the 16th of November was 72.

Mr. Henry Seebohm exhibited two examples of the Siberian Pectoral Sandpiper (*Tringa acuminata*) which had been obtained on the Norfolk coast. These were the only authentic instances of the occurrence of the species in Great Britain. A series of specimens of *T. acuminata* and of its American ally, *T. maculata*, were placed on the table, and the differences between the two species, as also their geographical distribution, were pointed out.

Count Salvadori gave diagnostic characters for two new species of Pigeons of the genus *Phlogœnas*, as follows:—

Phlogœnas bimaculata, sp. n.

Phlogœnas tristigmata, Gould (nec Temm.), B. Asia, vi. pl. 59 (1873).

Ph. Ph. tristigmatæ simillima, sed cervice in medio omninò æneâ, parte superiore maculis duabus lateralibus purpureis ornatâ; rectricibus quatuor mediis brunneis, quintâ utrinque griseâ, fasciâ subapicali brunneâ notatâ, quatuor extimis griseis, fasciâ subapicali nigrâ ornatis.

Hab. Macassar, S. Celebes.

PHLOGŒNAS ALBICOLLIS, sp. n.

Phlogœnas sp., Wiglesw. Aves Polyn. p. 55, no. 286 (1891).

Ph. Ph. erythropteræ simillima, sed capite et collo cum pectore albis distinguenda.

Hab. Bow Island, Pacific Ocean (*Belcher*).

A communication from the Hon. WALTER ROTHSCHILD contained the description of a new Pigeon of the genus *Ptilopus*, which he proposed to call—

PTILOPUS SALVADORII, sp. n.

P. P. pectorali affinis, sed rostro longiore, colore lætiore, tectricibus alarum minoribus albo-cinerascente pustulatis, et gulâ inferiore luteo tinctâ haud difficile distinguendus. Long. tot. 8 poll., alæ 4·4, caudæ 2·5.

Hab. Island of Jobi, in the Bay of Geelvink.

In his notes Mr. Rothschild pointed out that this new species was intermediate to a great extent between *P. pectoralis* and *P. musschenbroeki*. It was, however, most closely allied to *P. pectoralis*, from which species it was distinguishable by the generally lighter shade of the ground-colour and by the characters given above in the diagnosis. The purple pectoral patch, which was somewhat irregular in shape in *P. pectoralis*, was slightly larger in *P. salvadorii*. It was much smaller than in *P. musschenbroeki*, and its inferior margin formed a straight line. In *P. pectoralis* the lesser wing-coverts were entirely unspotted, in *P. musschenbroeki* they had a large cinereous patch, while in *P. salvadorii* they had several distinct and separate spots of grey.

The types had been forwarded to Mr. Rothschild from Souroui, in the island of Jobi, by the late Mr. A. Bruijn, and had been procured in January. Mr. Rothschild had named the species in honour of Count Tommaso Salvadori, whose knowledge of the family of Pigeons was unrivalled.

Mr. HENRY SEEBOHM exhibited a specimen of the new Ground-Thrush, *Oreocincla cuneata*, De Vis, which had been lent to him by Mr. De Vis for illustration in his forthcoming 'Monograph' of the group. This species was stated to be a very interesting one, and specimens of the allied forms were laid upon the table for comparison.

Mr. SEEBOHM likewise made some remarks on the occurrences of the Barred Warbler (*Sylvia nisoria*) in the British Islands, an example of the species having been obtained in Yorkshire about a fortnight previously. He gave details of all the authentic British captures of this Warbler, the chief interest being in the fact that four specimens had been captured in the United Kingdom within a few weeks of each other—one having been taken in Ireland, one in Scotland, and two in England, only one previous occurrence of the bird in this country having been known.

Count SALVADORI read some notes on a rare Parrot, *Conurus rubritorques* of Sclater. The species had been described by Mr. Sclater from a specimen which lived in the Zoological Gardens, and the typical skin, in not very perfect condition, had passed into the collection of the British Museum. When writing the volume of the 'Catalogue of Birds' which dealt with the species, Count Salvadori thought that the red feathers on the throat and neck were due to a *lusus naturæ*; and this conclusion was supported by the fact that in allied species, especially in *C. wagleri*, red feathers were occasionally found on the throat, sometimes forming a red collar. Thus the Count had concluded that *C. rubritorques* was only an accidental variety of *C. holochlorus*. Recently, however, Messrs. Salvin and Godman had received from Nicaragua a series of ten specimens collected by Mr. W. B. Richardson, all of which had the red throat, and most of which showed some red feathers on the side of the neck, forming an incipient collar. Mr. Salvin had already referred these specimens to *C. rubritorques* ('Ibis,' 1892, p. 328), and had suggested that the conclusion of the 'Catalogue' required reconsideration. Having examined the series in the Salvin-Godman collection, Count Salvadori agreed that *C. rubritorques* must be recognized as a species, though the name had not been very happily chosen, as there was no red collar round the neck, but only a few red feathers on the side of the neck joining the red throat, and these feathers were not present in every individual. The bird was rather red-*throated* than red-*collared.*

Mr. Ernst Hartert made remarks on some new and interesting birds from the islands of the Dutch West Indies, near to the Venezuelan coast. Among other important facts established by Mr. Hartert during his recent exploration of these islands was the discovery of the true habitat of *Columba gymnophthalma,* which turned out to be the islands of Curaçao, Aruba, and Bonaire. On Bonaire Mr. Hartert had met with *Columba corensis, Margarops fuscatus,* and *Ammodromus savannarum.* The last-named species was also found on Curaçao, where also *Crotophaga sulcirostris* was procured. *Icterus vulgaris* was common to Curaçao and Aruba; but a very curious fact was the distribution of the three species of *Conurus,* each island having its own peculiar form—*C. pertinax* being met with in Curaçao, *C. æruginosus* in Aruba, and *C. xanthogenius* (apparently a subspecies of *C. pertinax*) in Bonaire.

Mr. Hartert described the following species as new to science:—

Myiarchus brevipennis, sp. n.

M. similis *M. tyrannulo,* sed tarso longiore, alis caudâque brevioribus, rostro nigro et notæi colore pallidiore distinguendus. Long. tot. 7·3 poll., alæ 3·4–3·5, caudæ 3·5, culm. 0·7–0·8, tarsi 0·75–0·85.

Hab. Islands of Aruba, Curaçao, and Bonaire.

It was remarkable that this bird should be closely allied to the continental *M. tyrannulus* rather than to *M. oberi* of the Windward Islands, which was quite a distinct species. It might, perhaps, be considered a subspecific form of *M. tyrannulus.*

Chrysotis rothschildi, sp. n.

C. similis *C. ochropteræ,* sed rostro minore, marginis cubitalis colore rubro magis extenso, et colore flavo capitis, menti, et alarum tectricum minorum minùs extenso distinguendus.

Hab. Island of Bonaire.

Remarks. No species of *Chrysotis* is found on Curaçao, but Bonaire and Aruba each possess a species, the latter island having *C. ochroptera* of Venezuela. The new species is named after the Hon. Walter Rothschild, who took very great interest in the author's expedition to Venezuela and the West Indian Islands.

STRIX FLAMMEA BARGEI, subsp. n.

S. minima: similis *S. flammeæ* veræ, sed multò minor et alis valdè brevioribus distinguenda. Long. tot. 12 poll., alæ 9·7, caudæ 4·3, tarsi 2·2.

Hab. Island of Curaçao.

Remarks. This is a very small insular form, totally unlike the ordinary Barn-Owl of the West Indies. It is more like typical *S. flammea*, but is very much smaller and has such short wings that it is impossible to unite it to that species. It is named after Mr. Harry Barge, Governor of the Dutch West India Islands.

XI.—*Notices of recent Ornithological Publications.*

1. *Allen on the Woodpeckers of North America.*

[The North-American Species of the Genus *Colaptes*, considered with special reference to the relationships of *C. auratus* and *C. cafer*. By J. A. Allen. Bull. Am. Mus. Nat. Hist. iv. p. 21, 1892.]

This is a philosophical discussion of the well-known case of *Colaptes auratus* and *C. mexicanus* of North America, and their intermediate forms, their allied species and subspecies being also considered. Mr. Allen has taken great pains in this matter, and for its investigation has collected together from his friends and correspondents a series of 785 specimens, "representing all the North-American and West-Indian forms of the genus." The main question is as to the *status* to be assigned to the numerous "mixed" forms between the very distinct *C. auratus* and *C. mexicanus*, which Baird in 1858 called *C. hybridus*. Formerly only known from the Upper Missouri and Yellowstone districts, these "hybrid Flickers" are now ascertained to extend in a broad belt all across the continent, from British Columbia to the Gulf of Mexico, as shown in Mr. Allen's excellent maps, separating the area of *C. auratus* on the north-east from that of *C. mexicanus* on the south-west. They present "ever varying combinations of the characters of the two birds," from individuals of *C. auratus* that show only the slightest traces of *C. mexicanus*, or conversely individuals of *C. mexicanus* with very slight traces of *C. auratus*, to examples in which the characters of the two species are almost equally blended. After a full discussion of the facts, the author's conclusion is that his investigations "tend strongly to confirm Baird's startling hypothesis of hybridization on a grand scale" between these two species. "None of the other hypotheses so far advanced so fully, or in fact to any great extent, meet the requirements of the case."

2. *Allen on Birds from Venezuela.*

[Notice of some Venezuelan Birds, collected by Mrs. H. H. Smith. By J. A. Allen. Bull. Am. Mus. Nat. Hist. iv. p. 51, 1892.]

The indefatigable collector, Mrs. H. H. Smith, made "a brief vacation trip" to the northern coast of Venezuela in the autumn of 1891, and in less than ten days procured about 60 specimens at Carúpano and El Pilar, which are referred by Mr. Allen to 48 species. Of these *Rhamphocœlus atrosericeus capitalis*, *Lophotriccus subcristatus*, and *Picumnus obsoletus* are described as new. Some other specimens are referred provisionally to described species.

3. *Allen on a new Gallinule.*

[Description of a new Gallinule from Gough Island. By J. A. Allen. Bull. Am. Mus. Nat. Hist. iv. p. 57, 1892.]

Mr. Allen describes a new flightless Gallinule from Gough Island, which is situated in the Atlantic, about 200 miles S.W. from the Cape and south of Tristan d'Acunha. He calls it *Porphyriornis comeri* (gen. et sp. nov.), and refers *Gallinula nesiotis*, Scl. (P. Z. S. 1861, p. 261, pl. xxx.), from Tristan d'Acunha, to the same genus.

4. *Bendire's Life-Histories of North-American Birds.*

[Life-Histories of North-American Birds, with special reference to their breeding-habits and eggs, with twelve lithographic Plates. By Charles Bendire, Captain U.S. Army (Retired). 1 vol. 4to. Washington: 1892. (Smiths. Inst. U.S. Nat. Mus., Special Bulletin, No. 1.)]

Capt. Bendire's name is well known to us as that of one of the most observant and experienced of the field-naturalists of North America, and a leading authority upon its birds and their eggs. As Honorary Curator of the Department of Oology in the National Museum, he has splendid opportunities for preparing a comprehensive treatise on this subject, of which he appears to have fully availed himself. But the work does not consist merely of descriptions of nests and eggs. "Special attention has been given to the life-history, the migratory and breeding ranges, and the food of each species."

The classification and nomenclature are those of the Check-list of the A. O. U., and every species and subspecies is treated of separately, and its breeding-range defined as accurately as possible according to the most recent sources of information.

The present volume contains the account of the Gallinæ, Columbæ, Accipitres, and Striges, altogether 146 species. The twelve plates contain figures of the eggs of most of the species. They are beautifully drawn and coloured.

5. *Bocage on Birds from Benguela.*

[Aves do Sertão de Benguella. Por J. V. Barboza du Bocage. Jorn. Sc. Lisboa, (2) vii. p. 157.]

In consequence of the death of de Sousa, M. Barboza du Bocage has again assumed the direction of the Lisbon Museum for some months, and continues the account of Anchieta's collections in Quissanga, commenced by de Sousa in 1889 (see Ibis, 1890, p. 120). The present paper gives the names of 71 species, with remarks, especially on *Thamnolæa shelleyi*, Sharpe.

6. *Bocage on Birds from Dahomey.*

[Aves de Dahomé. Por J. V. Barboza du Bocage. Jorn. Sc. Lisboa, (2) vii. p. 185.]

M. Barboza gives a list of 16 species of which specimens were obtained during a second visit of Sr. Newton to Dahomey, and transmitted to the Lisbon Museum. The specimens obtained during Sr. Newton's first visit were worked out by de Sousa, and published in the same Journal in 1887 (see Ibis, 1887, p. 468).

7. *Buller on New Zealand Birds.*

[Notes and Observations on New Zealand Birds. By Sir Walter L. Buller, K.C.M.G., F.R.S. Trans. New Zealand Inst. xxiv. p. 64.—Further Notes and Observations on certain species of New Zealand Birds (with Exhibits). *Ibid.* p. 75.]

In these two articles Sir Walter Buller continues his notes on the rarer birds of New Zealand and on additions to its avifauna. The occurrence of *Platycercus erythrotis*, a close ally of *P. novæ-zealandiæ*, on Antipodes Island, associated with *P. unicolor* (a peculiar endemic species), is certainly a very curious fact in distribution. Many particulars are given of the ranges of the Albatrosses, including the newly-differentiated *Diomedea regia*, and of the different Penguins in their breeding-grounds on the Antarctic Islands. It is very unsatisfactory to learn that the supposed bevies of the New Zealand Quail (*Coturnix novæ-zealandiæ*) asserted to have been recently met with in the Three-Kings Islands (*cf.* Birds N. Z. i. p. 228, footnote) turn out to belong to the Brown Quail (*Synœcus australis*), introduced from Australia, and that the native species is undoubtedly extinct.

8. *Buller on* Apteryx maxima.

[On the large Kiwi from Stewart Island (*Apteryx maxima*). By Sir W. L. Buller. Trans. New Zealand Inst. xxiv. p. 91.]

The author gives further particulars concerning the large Kiwi of Stewart Island, not recognized as distinct in the

'Birds of New Zealand,' but lately referred by him to *Apteryx maxima* of Verreaux (Trans. N. Z. Inst. xiii. p. 602). Four specimens were brought to Wellington alive, and thence shipped to Europe. These are, no doubt, the birds belonging to Mr. Walter Rothschild, which were placed under the care of Mr. Doggett, of Cambridge, where we had the opportunity of examining them in August 1891. They are, we believe, the only specimens of this fine species ever seen in Europe.

9. *Büttikofer on the Genus* Tatare.

[The Specimens of the Genus *Tatare* in the Leyden Museum. By J. Büttikofer. Notes Leyd. Mus. xiv. p. 13.]

The author discusses the specimens of the genus *Tatare* in the Leyden Museum. Of these 7 are referred to *T. longirostris*, 1 to *T. mendanæ*, and 1 to *T. luscinia*.

10. *Büttikofer on* Thamnolæa nigra.

[On the Specific Value of Levaillant's Traquet Commandeur. By J. Büttikofer. Notes Leyd. Mus. xiv. p. 17.]

Mr. Büttikofer gives the synonymy and special characters of Levaillant's Traquet Commandeur (*Thamnolæa nigra*) of West Africa, and remarks on its allied forms of South and East Africa.

11. *Büttikofer on Birds from Liberia.*

[On the Collections of Birds sent by the late A. T. Demery from the Sulymah River (W. Africa). By J. Büttikofer. Notes Leyd. Mus. xiv. p. 19.]

The last collections of Archey Thomas Demery—an energetic naturalist, whose death in Liberia was announced in 1891—have now been received, and Mr. Büttikofer gives us an account of the birds, which were obtained at the western end of Liberia, on the frontiers of Sierra Leone. They are referred to 96 species, 10 of which are new to Liberia. Critical notes on the Weavers of the genus *Malimbus* and other species are added.

12. *Büttikofer on a Sumatran Weaver-bird.*

[On a Chestnut-and-Black Weaver Finch from Sumatra. By J. Büttikofer. Notes Leyd. Mus. xiv. p. 132.]

The author describes two Weaver-birds from Sumatra allied to *Munia atricapilla*, but is not confident as to their differences being specific.

13. *Büttikofer on Birds from Flores, Sumba, and Rotti.*

[On a Collection of Birds from the Islands of Flores, Sumba, and Rotti. By J. Büttikofer. Notes Leyd. Mus. xiv. p. 193.]

Dr. H. ten Kate has sent to the Leyden Museum collections of birds from the East Indian islands of Flores, Sumba (or Sandalwood), and Rotti, a small island near Timor, and Mr. Büttikofer gives us an account of them. The specimens from Flores belong to 13 species, of which one (*Acanthiza tenkatei*) is described as new. The occurrence of this Australian genus so far away from its focus is remarkable. From Sumba examples of 32 species were received. These are mostly birds that also occur in Flores, but *Dicæum wilhelminæ* is new and peculiar. Mr. Büttikofer also makes important remarks on *Stigmatops ocularis* and *Munia nisoria* from this island. From Rotti five species are catalogued, of which *Rhipidura tenkatei* is described as new.

14. *Cherrie on two new* Tyrannidæ.

[Description of two apparently new Flycatchers from Costa Rica. By George K. Cherrie. Proc. U. S. Nat. Mus. xv. p. 27.]

Mr. Cherrie describes *Mionectes semischistaceus* and *Ornithion pusillum subflavum*, both from Costa Rica, belonging to the family Tyrannidæ.

15. *Clarke's Report on the Great Skua.*

[Report on the Great Skua (*Stercorarius catarrhactes*, Linnæus) in Shetland during the Season of 1891. By William Eagle Clarke. Ann. Scottish Nat. Hist. 1892, p. 87.]

Ornithologists will be greatly pleased to hear that the attention lately called to the persecution of the Great Skua, and the bestowal by the Zoological Society of London of their Silver Medal to representatives of the families of Scott and Edmondston for the preservation of this bird, have been "undoubtedly the means of doing much good." Foula, it appears, was visited in 1891 by about 100 pairs of this bird, and although nearly all the first laying of their eggs was taken, about 60 birds of the second laying were reared.

As regards the colony at Unst, Mr. Thomas Edmondston, in 1891, as already stated in this Journal (Ibis, 1891, p. 633), engaged a special keeper to live for three months on Hermanness and guard the Bonxies. The result was that of nine pairs that nested seven succeeded in hatching and rearing their young. All naturalists, as Mr. Clarke well puts it, "will accord Mr. Edmondston their warmest thanks for his great and happily successful efforts" to protect these birds.

16. *Collett on the Birds of Arctic Norway.*

[Das Leben der Vögel im Arctischen Norwegen. Oeffentlicher Vortrag aus Anlass des zweiten Congresses zu Budapest gehalten am 13 Mai 1891 im Palaste der Ungarischen Akademie der Wissenschaften, von Professor Robert Collett.]

Amongst the many products of the International Ornithological Congress of 1891 is an excellent address on the Bird-life of Northern Norway by Prof. Collett, of which we have lately had the pleasure of receiving a copy from the hands of the author. Prof. Collett, who is a well-known expert on this subject, describes the physical aspect and winged inhabitants of the district round the North Cape in a manner which will inspire every ornithologist who reads his address with a wish to visit these solitudes.

Here, in 1880, Prof. Collett found *Tringa minuta* breeding in two separate spots on the banks of the Porsangerfjord, in company with colonies of *Tringa temmincki*. Here, in 1872, on the little island of Tamso, were about 30 pairs of *Colymbus septentrionalis* nesting. Here also *Phylloscopus borealis*, unknown except as an occasional straggler in the rest of Europe, comes every year to rear its young, and *Anser erythropus* is widely diffused along the bushy banks of the lakes and streams. As regards resident species, our author remarks that some of them show local variation in the direction of *white*. This is the case with examples of such birds as *Pica caudata*, *Parus borealis*, *Dendrocopus minor*, and *Picoides tridactylus* procured in Finmark. *Dendrocopus major*, on the other hand, appears to be unaffected by its nearer approach to the polar snows.

Speaking of the enormous development of the Lemming and other rodents in certain years, Prof. Collett states that a corresponding increase of beasts and birds of prey seems to take place at the same time. The mountains are rife with *Astur palumbarius*, *Archibuteo lagopus*, *Asio accipitrinus*, *Nyctea scandica*, and other Accipitres and Striges. Of the Snowy Owl, a remarkable instance of its productiveness in some years is given in the case of a nest found in July 1872, which contained four half-grown young, 2 of smaller size, 3 just hatched, besides an egg half hatched—altogether ten of one family, for the support of which, it is evident, a large supply of rodents would be required.

We need say no more of this most interesting essay, except to recommend every ornithologist to read it. It is a foretaste of what awaits us when Prof. Collett's long-expected volumes on the Vertebrates of his native country, which he has studied so long and so well, shall make their appearance.

17. *D'Urban and Mathew's 'Birds of Devon.'*

[The Birds of Devon. By W. S. M. D'Urban, F.L.S., and the Rev. Murray A. Mathew, M.A., with an Introduction and some Remarks on the Migrations of Devonshire Birds. 8vo. London: 1892.]

After Mr. Pidsley's not quite satisfactory work on the Birds of Devon (*cf.* Ibis, 1891, p. 460) follows, rather quickly perhaps, another work on the same subject, which is, at all events, more complete. After an introduction, in which the geographical position and varied features of the different parts of the county are set forth in glowing periods, the "Faunistic Position of Species" is considered. This to us somewhat ambiguous heading will be found to indicate a general review of the Devonshire Ornis under seven categories. Of these we would remark that "Casual" and "Accidental" are terms much too nearly equivalent to be used in different senses. For the 68 "Casual" visitors to Devonshire we think "Irregular" a much better name, while we should agree with our authors in limiting the term "Accidental" to the waifs and strays.

In the main portion of the work we find ample notes on the 292 species included in the list, to which "no bird not actually obtained by competent persons has been admitted," except the Black-headed Warbler (*Sylvia melanocephala*), Water-Pipit (*Anthus spipoletta*), and Hawk-Owl (*Surnia funerea*), about which "the authors entertain no doubt." Good coloured figures by Keulemans are given of four species—*Ruticilla titys* (a regular winter visitor on the south-western coast of Devon), Montagu's Harrier, the Rough-legged Buzzard, and *Larus ichthyaëtus*, from the only example of this bird ever killed in the British Islands. There are likewise views, taken from photographs, of the Birds at Lundy, Start Point, Slapton Ley, and the Eddystone, all characteristic scenes of the county of Devon.

18. *Evans on the Birds of the Melrose District.*

[A Preliminary List of the Birds of the Melrose District. By A. H. Evans, M.A., F.Z.S. Reprinted from the 'Scottish Naturalist,' 1892.]

Mr. Evans's list of the birds of the Melrose district will be useful to students of the British Avifauna, as giving much information on the Ornithology of the Border Country. Its scope includes the whole county of Roxburgh, and portions of those of Selkirk, Peebles, Berwick, and Northumberland. Many local ornithologists have rendered assistance to the author. The Ring-Ouzel breeds plentifully in the hills of this district; the Redstart is said to be more abundant than formerly; the Grasshopper Warbler is common "on the rough heathery sides of the Cheviots, and one pair of Ravens is still known to nest there."

19. *Evans on the Grebe of Ross-shire.*

[On the supposed Breeding of the Sclavonian Grebe (*Podicipes auritus*, L.) in Ross-shire. By A. H. Evans. Ann. Scott. N. H. i. p. 171, 1892.]

Mr. Evans, having examined carefully into the supposed case of the Sclavonian Grebe breeding in Ross-shire, reported by E. T. Booth ('Rough Notes,' vol. iii.), has come to the conclusion that these Grebes are *Tachybaptes fluviatilis* and not *Podiceps auritus*.

20. *Forbes on Extinct Birds of New Zealand.*

[Preliminary Notice of Additions to the Extinct Avifauna of New Zealand. By H. O. Forbes: communicated by J. T. Meeson, B.A. Trans. New Zealand Inst. xxiv. p. 185.]

This is an abstract of a paper in which the author describes "twelve species new to the ancient bird-life of New Zealand," based on specimens accumulated from various localities, and makes many additions to our knowledge of species previously described. Amongst the new forms are two large Harriers (*Circus hamiltoni* and *C. teauteensis*), a presumed new *Notornis* (*N. parkeri*), two new species of *Cnemiornis* (*C. minor* and *C. gracilis*), a Cereopsis Goose (*Cereopsis novæ-zealandiæ*), a gigantic Rail (*Ocydromus insignis*), a Musk-Duck (*Biziura lautouri*), and what, if Mr. Forbes is correct in his views, is a discovery of the highest interest—a new genus of Moas, "with many Casuarine characters," proposed to be called *Palæo-casuarius*. Of this genus the author recognizes three species, *P. haasti*, *P. elegans*, and *P. velox*, founded on a series of tibiæ in his collection. We trust that there will be no delay in the publication of this memoir entire, as not even specific characters are given in this abstract.

21. *Forbes on* Cyanorhamphus erythrotis.

[Note on a Species of *Platycercus* (*P. erythrotis*, Wagl.) from Antipodes Island. By H. O. Forbes: communicated by J. T. Meeson. Trans New Zealand Inst. xxiv. p. 190.]

Mr. Forbes is not correct, we believe, in his identification of the *Cyanorhamphus* of Antipodes Island belonging to the group of *C. novæ-zealandiæ*. As Count Salvadori has pointed out to us, it is *C. hochstetteri*, Reischek (Trans. N. Z. Inst. xxi. p. 87; *cf.* Salvad. Cat. B. B.M. xx. p. 577). *C. erythrotis* is the representative form on Macquarie Island. *C. saisseti* of New Caledonia is quite distinct.

22. *Godman and Salvin's 'Biologia Centrali-Americana.'*

[Biologia Centrali-Americana; or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. Edited by F. DuCane Godman and Osbert Salvin. (Zoology.) Parts ciii. & civ. 4to. London: 1892. Published for the Editors by R. H. Porter, 18 Princes Street, Cavendish Square, W.]

In these parts the history of the Central-American Humming-birds is continued, and the genera *Petasophora*, *Panterpe*, *Agyrtria*, *Arinia*, *Cyanomyia*, *Amazilia*, *Floricola*, *Cyanophaia* (melius *Cyanophæa*), *Damophila*, *Polyerata*, *Chrysuronia*, and *Basilinna* are treated of. These, except *Petasophora*, belong to the "intermedii," with the tomiæ slightly serrated. The "Trochili lævirostres" are then commenced, and the Central-American species of the following genera are described:—*Eutoxeres*, *Threnetes*, *Phaëthornis*, *Pygmornis*, *Sphenoproctus*, *Campylopterus*, *Phæochroa*, *Eugenes*, *Cœligena*, *Oreopyra*, *Delattria*, *Lamprolæma*, *Heliodoxa*, *Florisuga*, *Abeillea*, *Klaïs*, *Doricha*, *Tilmatura*, *Calothorax*, *Selasphorus*, *Trochilus*, and *Atthis*.

Cyanomyia guerrerensis is described as a new species from the State of Guerrero, discovered by Mrs. H. H. Smith. It is nearly allied to *C. viridifrons*.

The following species are figured in part ciii.:—*Delattria margarethæ*, *D. sybillæ*, *Selasphorus ardens*, *S. torridus*, *Lophornis adorabilis*, and *Eupherusa nigriventris*.

23. *Hamilton on Moas' Gizzard-stones.*

[Notes on Moa Gizzard-stones. By A. Hamilton. Trans. New Zealand Inst. xxiv. p. 172.]

The author gives an account of the discovery of several lots of Moas' gizzard-stones "of pure white quartz" in a peaty district near Dunedin, Otago. In one example the whole mass (supposed to belong to one bird) weighed 4½ lb., in another 6 lb. The total disappearance of the bones of these Moas is supposed to be due to the "strongly acid character of the decaying vegetable matter" in which they were imbedded.

24. *Hamilton on the Genus* Aptornis.

[On the Genus *Aptornis*, with more especial reference to *Aptornis defossor*, Owen. By A. Hamilton. Trans. New Zealand Inst. xxiv. p. 175.]

After a preliminary notice of the authorities on *Aptornis* (now known to be an extinct Rail, allied to *Ocydromus*, but originally referred to *Dinornis*), Mr. Hamilton describes a series of bones of *Aptornis defossor* found in some limestone caves on the Oreto River, Otago. The collection comprises one perfect and three imperfect skulls, a complete set of vertebræ, an absolutely perfect pelvis, and three perfect sterna, besides bones of the extremities and many others. This paper adds greatly to our knowledge of the genus *Aptornis*.

25. *Hartert on a new* Batrachostomus.

[On a new Species of *Batrachostomus*. By Ernst Hartert. Notes Leyd. Mus. xiv. p. 63.]

Herr Hartert publishes a description of a new *Batrachostomus*, based on a specimen in the Leyden Museum obtained by Horner in the province of Padang, Western Sumatra, in 1837, for which he adopts the MS. name *B. poliolophus* of Temminck. (*Cf.* Hartert, Cat. Birds, xvi. p. 638.)

26. *Hartlaub on Birds from China.*

[Ein Beitrag zur Ornithologie Chinas. Von Dr. G. Hartlaub. Abhandl. naturw. Ver. Bremen, xii. p. 295.]

Dr. Hartlaub has examined three collections of birds from China lately received by the Bremen Museum, and now gives us an account of them. One, received from Herr Schmacker (whose name is already known in connection with Chinese ornithology, see above, p. 54), is principally from Formosa; a second, presented by Herr A. Schomberg, is from Hainan and from Pakhoi, in the Gulf of Tonquin; and the third, from the vicinity of Tientsin, was made by Herr A. Walte. After preliminary remarks on these and a list of the principal authorities on Chinese birds, Dr. Hartlaub gives us a list, with notes on 186 species represented in the three collections.

Amongst the rarer species in the list are *Erithacus sibilans* (Swinh.), an example from Hainan; *Ixos hainanus* and *Pomatorhinus nigro-stellatus*, both from the same island; as also *Psaropholus nigellicauda*, which Dr. Hartlaub regards as a good species. Of *Palæornis lathami*, Finsch, adult and young examples were likewise obtained in Hainan, and are doubtless correctly determined. But as regards the second Chinese species of *Palæornis* mentioned by Dr. Hartlaub and supposed to be *P. derbyanus* (Dav. & Oust. Ois. Chine, p. 1, pl. 1) we believe that there has been some error *.

Other interesting species in the Hainan list are *Ibis melanocephala*, *Eurinorhynchus pygmæus*, and *Larus saundersi*.

27. *Harvie-Brown and Buckley on the Fauna of Argyll and the Inner Hebrides.*

[A Vertebrate Fauna of Argyll and the Inner Hebrides. By J. A. Harvie-Brown and Thomas E. Buckley. Royal 8vo. Edinburgh: 1892.]

In our notice of Messrs. Buckley and Harvie-Browne's 'Vertebrate Fauna of the Orkneys' (Ibis, 1892, p. 166) we spoke of that volume as completing a "trilogy." But we find that the whole series consists of *five* volumes, of which the last is now before us. That these excellent books have been much appreciated is sufficiently evident from the fact that the first two (those on Sutherland and the Outer Hebrides) are already out of print.

Of the present volume it is sufficient to say that in general execution and in the beauty of its illustrations it fully equals the four which preceded it. The series of maps contains not only one of the whole area treated, but also separate charts of Rum, Eigg, Tiree, and other islands which are not so well known. The physical features of Argyll and the Inner Hebrides are very fully described and illustrated by these maps.

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* *Cf.* Salvadori, Cat. B. xx. p. 464.

Of the 368 species of birds attributed to Great Britain by the most recent authorities no less than 210 have been ascertained to be resident in or migrants to the area comprised in this volume. Amongst these, the rarest, we suppose, is *Xema sabinii*, of which an example in adult plumage was shot on Loch Spelve, Mull, in September 1883.

28. *Hutton on the Moas.*

[The Moas of New Zealand. By Captain F. W. Hutton, F.G.S. Trans. New Zealand Inst. xxiv. p. 93.]

We have already mentioned the abstract of this memoir (Ibis, 1892, p. 565), which is of great importance, as containing an excellent *résumé* of the present state of our knowledge of the *Dinornithes*. We are glad to observe that Mr. Lydekker has taken up the question of the discrepancy between his arrangement of his genera and that of Capt. Hutton, and has already given us explanations of the subject. (See 'Natural Science,' 1892, p. 588.)

Capt. Hutton's conclusions as to the date of extinction of the Moas are (1) that in the North Island "we have undoubted proofs that the ancestors of the present Maoris killed and ate Moas," and that they were probably exterminated "not less than four or five hundred years ago"; (2) that in the South Island, where the fresh remains have been found, the date of extermination was probably a hundred years later.

29. *Junker's Travels in Africa.*

[(i.) Travels in Africa during the years 1879–1883. By Dr. Wilhelm Junker. Translated from the German by A. H. Keane, F.R.G.S. London: 1891.

(ii.) Travels in Africa during the years 1882–1886. By Dr. Wilhelm Junker. Translated from the German by A. H. Keane, F.R.G.S. London: 1892.]

These two volumes complete the account of Junker's explorations of the tropics of Eastern Africa, and, we regret to say, announce the death of this celebrated traveller, which took place at St. Petersburg in February 1892. Ornithologists will recollect Dr. Sharpe's paper on Bohndorff's collection published in 1884 (see Ibis, 1885, p. 115). Now Bohndorff was Junker's companion for some years, but left him just in time to make his escape by the northern route from the Upper Nile before it was closed by the Mahdist rebellion. Bohndorff thus saved a part of his own collections, but those that he made for Junker were unfortunately lost when the latter was forced to escape towards the south and join Emin Pasha at Wadelai. Many allusions to birds, however, will be found in Junker's journals, and some good woodcut illustrations of characteristic species. Junker met with *Balæniceps rex* on the White Nile (i. p. 45) and obtained living specimens (i. p. 65). The *Numida* obtained in Amadi-land on the Welle and figured (i. p. 423) could hardly be *N. vulturina* and is probably new. The northern limit of *Psittacus erithacus* in this country is stated to "coincide with the course of the Welle-Makua," although stray birds are sometimes met with to the north of that river (ii. p. 260).

30. *Macpherson and Ferguson's 'Vertebrate Fauna of Lakeland.'*

[A Vertebrate Fauna of Lakeland, including Cumberland and Westmorland with Lancashire north of the Sands. By the Rev. H. A. Macpherson, M.A. With a Preface by R. S. Ferguson, F.S.A. 8vo. Edinburgh: 1892.]

This volume makes a good addition to the well-organized series on the Scotch Avifauna of Messrs. Harvie-Brown and Buckley, and, taken in conjunction with Mr. Muirhead's 'Birds of Berwickshire' (of which we presume the second volume will appear shortly), will serve to complete our knowledge of the Ornis of Northern Britain.

Lakeland, as our author appropriately terms the area of which he writes, is one of the most attractive portions of England, and very varied in its character, containing not only the whole of the "Lakes," as they are commonly called, and the splendid mountain district in which they lie, but also a long line of sea-coast broken by many estuaries, of which "the sands, creeks, and marshes, feeding and sheltering innumerable flocks of waterfowl, are happy hunting-grounds alike for the sportsman and the naturalist." Under these circumstances it was to be expected that Lakeland would furnish a goodly list of birds, and we find 262 species recorded as occurring within its limits. Of these we may perhaps pick out the Pied Flycatcher (*Muscicapa atricapilla*) and the Dotterel (*Eudromias morinellus*) as two of the most characteristic birds of the Lakeland Avifauna, whilst the Isabelline Wheatear (*Saxicola isabellina*), to which a plate is devoted, is its greatest rarity *.

Our readers, however, must not confine their attention to the Birds of this work. They will find the whole volume of interest, especially the introductory chapters on the Naturalists of Lakeland, the extinct mammals, and the various modes of bird-fowling. Moreover, like all Mr. Douglas's books, it is well printed and nicely illustrated, and concludes with an excellent map.

31. *Merriam on Geographical Distribution in North America.*

[The Geographic Distribution of Life in North America, with special reference to the Mammalia. By C. Hart Merriam, M.D. Proc. Biol. Soc. Washington, vii. pp. 1-64, 1892.]

Dr. Merriam's Presidential Address to the Biological Society of Washington relates principally to the Mammals of North America, on which subject he is a well-known expert. But the author also refers to birds, and his essay deserves the careful attention of every naturalist. Its main object is to vindicate his position (*cf.* Ibis, 1891, p. 134) that we have hitherto been altogether wrong in our views as to the Nearctic Region. There is no such region at all! North America is divisible, according to its Mammal-life at all events, into three regions:—(1) The Boreal, which extends also over Northern Europe and Asia, and is circumpolar; (2) The Sonoran, or Mexican Table-land Region, which is "unique"; and (3) a Tropical Region, which belongs to South America. This scheme of division is clearly set forth in well-ordered paragraphs and illustrated by an excellent "Bio-geographic Map." To this we will reply shortly. In the extreme north, no doubt, the Nearctic Region in its phase of life closely approximates, as it does geographically, to the Palæarctic. Where two great regions join by land it is not possible to draw a definite boundary between them. But what Dr. Merriam calls the "Sonoran" is the true autochthonic portion of the Nearctic Region. Here is the original home of the Mniotiltidæ, the Vireonidæ, and other forms, the possession of which at once separates it from the Palæarctic Region. As regards the proposed new subdivision of the Nearctic Region into two subregions ("Boreal" and "Sonoran") instead of three ("Eastern" "Central," and "Western") as heretofore generally used, we have little doubt that Dr. Merriam is right in the main, and that in this point the birds, when carefully studied, will be found to conform to the same law as he has shown to prevail in the case of the Mammals.

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* *Cf.* Ibis, 1888, p. 149.

32. *Meyer on Birds from Kaiser-Wilhelms-Land.*

[Beitrag zur Kenntniss der Vogelfauna von Kaiser-Wilhelms-Land. Von A. B. Meyer. J. f. O. 1892, p. 254.]

Dr. Meyer's fourth contribution to our knowledge of the Avifauna of German New Guinea* is based on some collections made by the brothers Geisler at several localities, mostly on the coast. The specimens are referred to 33 species and subspecies, of which are described as new *Eupetes geislerorum*, *Diphyllodes chrysoptera septentrionalis*, and *Ptilopus coronulatus huonensis*.

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* For the preceding articles see (1) Zeitschr. f. d. ges. Orn. 1886, p. 30; (2) Ibis, 1890, p. 412; and (3) Abh. k. zool. Mus. Dresden, 1890–1, no. 4.

33. *Meyer on the Birds of Sumba.*

[The Birds of Sumba By A. B. Meyer. Notes Leyd. Mus. xiv. p. 265.]

Dr. Meyer points out that in his article on the Birds of Sumba (see above, p. 129) Mr. Büttikofer has overlooked a list of the birds of that island published by Dr. Meyer in 1881 (Verh. k. k. zool.-bot. Gesellsch. Wien), based upon materials received from Dr. Riedel, in which 40 species are enumerated. Adding those registered by Mr. Büttikofer, Dr. Meyer shows that 64 species are now known from Sumba, of which 3 are peculiar. He further vindicates the claim of the *Geoffroyus* of Sumba, previously referred to *G. jukesi,* to be distinguished as *G. tjindanæ,* and makes corrections concerning other species named in the list.

34. *Meyer and Helm's Sixth Report on the Birds of Saxony.*

[VI. Jahresbericht (1890) der ornithologischen Beobachtungstationen im Königreiche Sachsen, bearbeitet von A. B. Meyer und F. Helm. 4to. Berlin: Friedländer, 1892.*]

The report from the Saxon observing-stations for 1890 is drawn up from the contributions of 37 reporters at 36 stations, and relates to 169 species. To it is appended a complete list of the birds hitherto recorded as met with in the Kingdom of Saxony, altogether 274 species. The total number of German birds according to Homeyer's list is 357.

35. *Nicolls and Eglington's 'Sportsman in South Africa.'*

[The Sportsman in South Africa: the haunts, habits, description, and the pursuit of all game, both fur and feather, found south of the Zambezi (including the Cape Colony, Transvaal, Bechuanaland, Natal and Damaraland) at the present day, with brief notices of the best known fresh- and salt-water fish. By James A. Nicolls, F.R.G.S., F.Z.S., and William Eglington. 1 vol. 8vo. London: 1892.]

This is likely to be a useful book to the many travellers in South Africa who wish to know something about the game that they kill. The Mammals naturally occupy the most prominent place in the volume, but there are chapters on the Francolins, Quails, Guinea-fowl, Sand-Grouse, and other "game-birds." Considerable trouble has been taken with the compilation of this portion of the work. Short descriptions are given of all the species, and good original notes on the habits, from the observations of the authors, are added. These experienced observers do not appear to be well affected towards the Secretary-bird (*Serpentarius secretarius*). "It may possibly content itself, when other food is unobtainable, with a diminutive reptile or snake, as will several of the Hawk and Eagle tribe, the Bateleur or Short-tailed Eagle (*Helotarsus caudatus*) being an even more formidable antagonist in this respect. The natives term this bird *Bulai-nogha* (snake-killer) or *Peekeewe*. Although opinions differ, those who really have had proper opportunities of judging will say that the Secretary-bird should itself be exterminated whenever occasion offers, as it is not only a most destructive enemy to the young of all feathered game, but also to the young of the smaller antelopes and hares. Instances of its susceptibility to this description of food are too numerous to mention, while others can be adduced in which these gay deceivers will most carefully avoid coming into contact with even small snakes."

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* For notice of previous report see Ibis, 1891, p. 458.

The rare Duck *Thalassornis leuconota* was met with in the Vaalpens Pass in Bechuanaland in 1881, and also on Lake Ngami (see footnote, p. 125 of the book). The plates of this volume which are devoted to birds will no doubt be of material assistance to the sportsman in identifying the species, but we cannot view them as the result of great artistic skill, as the authors themselves appear to do.

36. *North on Australian Nests and Eggs.*

[Supplement to the Descriptive Catalogue of 'Nests and Eggs of Birds found breeding in Australia and Tasmania.' Part II. By A. J. North, F.L.S. Rec. Australian Mus. ii. p. 11.]

Mr. North gives us the second part of his Supplement to his Catalogue of Nests and Eggs of Australian Birds, the first part of which has been already noticed (Ibis, 1892,

p. 337). The principal novelties described are those of *Edoliosoma tenuirostre*, *Turnix melanotus*, *Ptilotis frenata*, and *Polytelis alexandræ*.

37. *Parker on the Development of* Apteryx.

[Additional Observations on the Development of *Apteryx*. By T. Jeffery Parker, B.Sc., F.R.S. Phil. Trans. R. Soc. London, vol. clxxxiii. (1892) B, pp. 73–84.]

This is a supplement to the memoir on the same subject which we noticed in 1891 (Ibis, 1891, p. 619), and is based on the examination of three additional embryos, which "fill important gaps in the series formerly studied, and serve to correct one or two erroneous conclusions."

38. *Quelch on the Birds of Prey of British Guiana.*

[Our Birds of Prey. By J. J. Quelch, B.Sc. London. 'Timehri,' vi. new ser., pt. i. p. 117 (1892).]

Mr. Quelch gives a list of 43 species of the Diurnal Birds of Prey occurring in British Guiana, thus adding 8 to the number mentioned by Mr. Salvin as met with in Whitely's collections (Ibis, 1886, p. 72). A long series of interesting field-notes on the various species is appended.

"Owing to the enormous abundance of food of all kinds, and to the immense uninhabited tracts of forest and savannah lands, furnishing splendid shelter and breeding-haunts, in all parts of the colony, these birds have multiplied to a remarkable extent, the species being not only distributed all over the colony, but represented by hosts of individuals to be met with in all directions. It is along the coast-districts generally, however, and more especially along the tidal parts of the larger creeks, that these birds are seen in greatest profusion and variety—though there are a few larger species, such as the Crowned Eagle (*Spizaëtus*), the Crested Eagle (*Morphnus*), the Harpy (*Thrasaëtus*), etc., that are met with only in the higher parts of the rivers, in the dense recesses of the forest, or on the open bushy savannah lands, in which latter places also the little Kestrels (*Tinnunculus*) are most commonly to be found."

39. *Regàlia on the Claws and Spurs of the Bird's-hand.*

[Su le Unghie e gli Sproni della Mano ornitica. Da Ettore Regàlia. Monitore Zool. Ital. iii. no. 1–2, 1892.]

In this essay the author commences by reviewing the literature on the claws and spurs of the bird's-hand at some length, especially alluding to the article on the subject published in this Journal for 1886 (pp. 147, 300), and to Mr. Jeffries's memoir which is there quoted. Dr. Regàlia then gives us a summary of his own researches on this subject* under the usual three heads: (I.) Species with a claw on the pollex only; (II.) Species with a claw on the index only; (III.) Species with a claw on both the pollex and index. Of the first he gives 35 examples among Italian birds, of the second 1, of the third 27 examples, adding explanatory notes in many cases. Thus Dr. Regàlia claims to have added 27 species to the third category, amongst which are members of the Orders Striges, Odontoglossæ, Limicolæ, and Gaviæ.

We are thankful to the author for what he has done, but consider the subject worthy of further investigations throughout the whole Class of Birds, and likely to yield useful results. The necessary examination can, however, be properly made only in fresh birds or in those preserved in spirit.

40. *Report of the International Ornithological Congress at Budapest.*

[Zweiter internationaler ornithologischer Congress. Hauptbericht ii. Wissenschaftlicher Teil. Mit zwei Tafeln. Budapest: 1892. 1 vol. 4to.]

This is the first part of the official report of the proceedings of the International Ornithological Congress held at Budapest in May 1891. It contains two addresses and 21 memoirs, mostly by well-known ornithologists, upon different branches of our subject. Major A. v. Homeyer's address gives an account of a visit to Pungo Andongo in Angola in 1875, with field-notes on the birds observed during the excursion. Prof. Collett discourses on the Bird-life of Arctic Norway

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* See notice of Dr. Regàlia's previous paper, Ibis, 1889, p. 124.

(see our notice of this capital essay above, p. 130). The 21 memoirs are as follows (we can give little more than their titles):—(1) Prof. Klug writes upon the digestion and digestive organs of Birds, especially of the Geese, which he complains is a rather neglected subject. (2) M. A. Milne-Edwards contributes an important essay on the Fossil Birds of the Eocene phosphatic lime-deposits of the south of France, in which the following new forms are described:—*Aquila hypogæa, Necrobyas* (gen. nov. *Accipitr.*) *harpax, N. rossignoli, Otus henrici, Bubo incertus, Dynamopterus* (gen. nov. *Zygodact.*) *velox, Archæotrogon venustus, Geranopterus alatus, Tachyornis hirundo, Filholornis pardaxa, F. gravis, F. debilis, Pterocles validus, P. larvatus, Palæortyx ocyptera, P. cayluxensis, Geranopsis* (gen. nov. *Gruid.*) *elatus, Ardea amissa, Rallus dasypus, R. arenarius, Orthocnemus gallicus, O. major, O. minor, Elaphrocnemus phasianus, E. gracilis, E. crex,* and *Tapinopus* (gen. nov.) *ellioti.* (3) M. F. de Schaeck treats of varieties of plumage in birds as exhibited by specimens in the Paris Museum. (4) M. Alphonse Dubois, of Brussels, in reply to the question suggested by the Congress in one of its circulars as to the establishment of a "classification internationale," puts forward the system adopted in his "Revue des dernières classifications ornithologiques," of which we have previously spoken (Ibis, 1892, p. 167). (5) Dr. E. Oustalet contributes a report on "la Biologie des Oiseaux," at the close of which he gives a list of 27 questions in the domain of "la Biologie Ornithologique," and directs the attention of the Congress to them. (6) Herr Johann v. Csató furnishes a report on the Diurnal Birds of Prey of Transylvania. (7) Dr. Karl Russ writes on the nests and nestling-plumages of foreign cage-birds—a subject in which, as we all know, he is well versed. (8) Herr Stefan v. Chernel describes the breeding and migrations of the Red-necked Phalarope (*Phalaropus hyperboreus*) and adds a beautiful coloured plate, illustrating the nestlings of this species. (9) Herr Adam v. Buda writes upon the rare birds of certain districts of Hungary, observed during the past 32 years. (10) Dr. R. Blasius discourses on the principles of "Oology," (11) Mr. Henry G. Hall on "odd-coloured eggs," and (12) Mr. A. J. Campbell on "Australian Oology." Mr. Campbell gives illustrations of the nest of *Menura victoriæ* and of a breeding-colony of *Anous stolidus* from photographs. (13) Dr. Giglioli's introductory memoir on the distribution of birds ("*Avigeografia*") follows next. Dr. Giglioli wishes to add two "Polar" Regions to the six of Sclater and Wallace usually adopted, and thus makes the number of primary zoological regions eight. (14) Mr. John Cordeaux gives a disquisition on the migration of birds—a subject on which he is no mean authority. (15) Heer J. Büttikofer of Leyden treats of the European migrants that he has found in Liberia. Twenty-three of our familiar species occur there during the winter season. (16) M. le Baron Edm. de Sélys-Longchamps writes of the occurrence of *Loxia bifasciata*, *Garrulus glandarius*, and *Parus pleskei* in Belgium. (17) Our friend Hans, Freiherr v. Berlepsch, makes an energetic protest against the destruction of small birds in Southern Europe[*]. The chief sinners are the Italians, who carry on a regular business in the capture of small birds for the market on an enormous scale. During the September migration more than 2000 birds are caught every morning at one of the establishments (between Lago Maggiore and Lago Lugano) which are elaborately constructed for the purpose, and the whole number of songsters destroyed every year must amount to millions. Under these circumstances, who can wonder that our migratory birds are growing scarce in Northern Europe? The Freiherr suggests that all bird-catching by nets and all sale of singing-birds for food shall be prohibited by law in Italy; but we fear there is little chance of these proposals being carried out. (18) The next essay in the series is on the importance of the poultry-trade in Hungary, by Prof. E. v. Rodiczky, which we need not enlarge upon. Then follow (19 and 20) accounts of the two excursions made by the members of the International Ornithological Congress to the Neusiedler-See by Dr. E. Schaeff, and to the Little Balaton-See by V. R. v. Tschusi-Schmidhoffen. This remarkable series of ornithological essays concludes with a long report by Herr Leverkühn on his journey to Hungary, and on the general proceedings of the International Congress, as witnessed by him.

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[*] "Die Vernichtung unserer Vögel im Süden und die daraus resultirende Schaden," *op. cit.* p. 179.

41. *Rhoads on the Birds of Texas and Arizona.*

[The Birds of South-eastern Texas and Southern Arizona observed during May, June, and July, 1892. By Samuel N. Rhoads. Proc. Acad. Nat. Sci. Philad. 1892, p. 98.]

Mr. Rhoads made an ornithological tour in Florida, Texas, and Arizona in the spring of 1891, and gives us an agreeable account of it. His camp on Mount Lemon, in Arizona, at 7000 feet altitude, must have been a delightful experience! In Southern Texas birds, especially Passeres, are said to be abundant everywhere, in spite of the drouth. This is attributed to the recent vast extension of tree-covered areas into the prairies, and to the increase of insect and vegetable food resulting therefrom. Mr. Rhoads found specimens of *Larus franklini* in Texas on June 1st, and two large flocks of Rosy Spoonbills (*Ajaja rosea*) on the Nueces river at the end of May. In Texas he met with examples of 100 species of birds, in Arizona of 124, on all of which field-notes are given. In the pine-belt of the Catalina Mountains in Arizona, Mr. Rhoads obtained an adult male of the Rivoli Humming-bird (*Eugenes fulgens*), believed to be the most northern record of this species, which, the season of its capture being considered, was probably breeding there. Other scarce species met with in Arizona were *Peucæa arizonæ* and *Auriparus flaviceps*, the latter abundantly near Tucson.

42. *Ridgway on the Humming-birds.*

[The Humming-birds. By Robert Ridgway. Rep. U.S. Nat. Mus. 1890, pp. 253–383.]

Mr. Ridgway kindly sends us a separate copy of his panegyric on the Humming-birds, extracted from the report of the National Museum of the U. S. for 1890. After singing its praises in an introduction, the author treats of the early history, names, geographical distribution, migrations, habits, disposition, and intelligence of the "minutest of the feathered kind." Particulars as to the nests and eggs of various species are then given. These are illustrated by 14 plates, mostly copied from Gould's Monograph, but original in the case of *Stellula calliope.* Next we find a chapter on the pterylosis and anatomy of the Humming-birds (contributed by Mr. F. A. Lucas), and a copiously illustrated essay on the variations in their structure and plumage. Finally, we have a "brief description of some of the more brilliantly-colored kinds" of this wonderful family, and an account of the 17 species which have been found within the limits of the United States, embracing the principal synonymy, characters, and habits, so far as they are known. Nearly the whole of these species are figured on lithographic plates—uncoloured, but excellently drawn, and of material use for identification. Altogether this is a very elaborate and interesting memoir upon what is evidently one of the author's favourite subjects.

43. *Ridgway on two new Subspecies of* Basileuterus.

[Descriptions of two new Forms of *Basileuterus rufifrons*, from Mexico. By Robert Ridgway. Proc. U.S. Nat. Mus. xv. p. 119.]

Mr. Ridgway characterizes as subspecies *Basileuterus rufifrons jouyi* from North-east Mexico and *B. r. dugesi* from Western Mexico.

44. *Scott's 'Notes on the Birds of Florida.'*

[Notes on the Birds of the Caloosahatchie Region of Florida. By W. E. D. Scott. 'The Auk,' ix. p. 209.]

Mr. Scott devoted five months in the winter of 1891–2 to the study of the birds of the Caloosahatchie River in Florida, his central point being Fort Myers in Lee County. It must be a good station, and Mr. Scott an energetic collector, for 1200 specimens were obtained, which are referred to 259 species. Of these a list is given, to which are appended field-notes on the most remarkable of them. This part of Florida is the home of *Botaurus neoxenus* (Cory), little known in European collections, and *Himantopus mexicanus* breeds there.

45. *Stone on the Birds of West Greenland.*

[Birds collected by the West Greenland Expedition. By Witmer Stone. Proc. Acad. Nat. Sci. Philad. 1892, p. 145.]

Greenland is a country of special interest to European ornithologists, and it is always agreeable to have additional information on its avifauna. The Heilprin expedition of 1891 did not make any serious advance in our knowledge of this subject, but what was effected by Dr. Wm. E. Hughes and Dr. B. Sharpe is set forth in Mr. Stone's memoir. The 147 specimens collected are referred to 21 species, most of which were found to be in full breeding-plumage. A series of Mandt's Guillemot (*Cepphus mandti*) "shows considerable variations in plumage." Eight males of the Ivory Gull (*Larus eburneus*) were collected in Melville Bay. The only Passeres met with were the Snow and Lapland Buntings and the Wheatear.

46. *Suchetet on Wild-bred Hybrids.*

[Les Oiseaux Hybrides rencontrés à l'état sauvage. Par André Suchetet. Troisième Partie: Les Passereaux. Mém. Soc. Zool. France, v. p. 253, 1892.]

We have now the concluding portion of M. Suchetet's exhaustive account of hybridism in birds (*cf.* Ibis, 1892, p. 344); it is devoted to such cases as have occurred in the Passeres and Picariæ. The author notices not only clear cases of hybridism, such as between *Carduelis elegans* and *Cannabina linota*, but also transitional forms between representative species, such as those between *Coracias indicus* and *C. affinis*, which occur on the borders of their respective ranges. He, however, distinguishes these in his "Conclusions." The most remarkable instances of hybridization known in the Passeres are perhaps those between the North American *Helminthophila pinus* and *H. chrysoptera* (which produce the forms called *H. leuco-bronchialis* and *H. lawrencii*) and the so-called *Ptilonorhynchus rawnsleyi*, supposed to have originated from a cross between *Sericulus chrysocephalus* and *Ptilonorhynchus holosericeus*! (*Cf.* Ramsay, P. Z. S. 1875, p. 69.)

47. *Winge on Birds observed at the Danish Light-stations.*

[Fuglene ved de danske Fyr i 1891. 9de Aarsberetning om danske Fugle. Ved Herluf Winge. Vidensk. Medd. naturh. Foren. Kjbhvn. 1892, p. 77.]

Mr. Winge's report on the birds observed at the Danish Light-stations in 1891 is elaborately worked out, as on former occasions (*cf.* Ibis, 1892, p. 344). It is accompanied by a coloured figure of the chick of *Syrrhaptes paradoxus* in two stages, nicely drawn by Mr. H. Grønvold from specimens in the Zoological Garden, Copenhagen, also an excellent chart of the Light-stations.

XII.—*Letters, Extracts, Notices, &c.*

We have received the following letters, addressed to the Editor of 'The Ibis':—

Sir,—I dare say it will interest your readers to hear of a new addition to our Dutch Avifauna. On the 11th October a young male of *Xema sabinii* was shot on the Hoek van Holland. The specimen was sent to the Leyden Museum, where it was identified by Dr. Jentink. After it has been stuffed it will probably go to the Museum of the Zoological Gardens of the Hague. Yours &c.,

's Graveland, Hilversum, Holland. F. E. Blaauw.
24th October, 1892.

Sir,—The following notes on the occurrence of *Numenius tenuirostris* and *Glareola pratincola* in Holland may be worthy of a place in 'The Ibis.'

These rare stragglers from the south have been observed in the Netherlands on various occasions.

The earliest discovery of the Slender-billed Curlew (*Numenius tenuirostris*) was made known by my friend the late Mr. J. P. van Wickevoort-Crommelin, who obtained a male example of this species shot at Spaarndam, in North Holland, on the 15th of December, 1856. It forms part of his choice collection, the whole of which, according to his wish, after his death, was presented by his daughter to the National Museum of Leyden.

A second specimen I have lately seen in the collection of Mr. Jos. van der Harten, at Eindhoven, in North Brabant. This bird was killed near Zieriksee, in the Isle of Schouwen, in Zeeland, December 5th, 1888.

A third example, a male, according to Mr. Albarda, captured on the coast of Friesland, near Hallum, on December 27th, 1889, is now in the Museum of the Royal Zoological Society 'Natura Artis Magistra,' at Amsterdam.

It is remarkable that our specimens were all met with in December.

Respecting the Common Pratincole (*Glareola pratincola*), Temminck says in the first and second editions of his 'Manual' (1815 and 1820) that it is "très rare en Hollande." Since that date the first authenticated instance of the occurrence of this bird in the Netherlands took place on the 24th of July last, when a specimen was obtained in the neighbourhood of Bois-le-Duc in North Brabant. This example, which I have seen, was set up by Mr. Zinling of that place, and is in that gentleman's possession. It is an adult female, captured in a net amongst Lapwings and Ruffs, in the immediate vicinity of the lake of Vlymen.

123 Noordeinde, The Hague.
October 4th, 1892.

Yours &c.,
H. W. DE GRAAF.

SIR,—On looking through the recently-published Vol. XVII. of the Cat. B. Brit. Mus., I observe that in the synonymy of the Meropidæ there are some omissions which it will, I think, be advisable to point out. These are as follows:—

(1) MEROPISCUS GULARIS AUSTRALIS, Reichenow, J. f. O. 1885, pp. 222, 468 *.

Melittophagus gularis australis (Reichenow), Dresser, Monogr. Merop. Introd. p. xviii (1886).

Meropiscus australis, Reichenow, J. f. Orn. 1890, p. 116.

Under this name Dr. Reichenow has separated the southern from the northern form of *Melittophagus gularis*, and says:—"In the typical form from the Gold Coast, and also in specimens from Liberia, the forehead and a broad superciliary stripe are light cobalt-blue, as is also the rump. Individuals from Angola and the Congo, on the other hand, have the stripe on the forehead blue-green, and a but slightly defined superciliary stripe olive-green. Individuals from the Gaboon and Camaroons agree with the Angola birds, but the superciliary stripe is more clearly defined and blue-green. Whether there is a third race must be decided later on, but at present it is only the northern and southern races that are in question, the division between them being probably the Camaroons district, that being the northernmost point reached by the southern form. In the Niger district the typical form most probably occurs."

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* Just as the above had gone to press I observed that Dr. Sharpe refers to the above species at the close of his article (p. 51), but it is omitted from the index, and hence was overlooked.—H. E. D.

It is the southern form to which Dr. Reichenow gives the subspecific name *australis*.

(2) MELITTOPHAGUS, nov. sp. aff. M. ALBIFRONS, Matschie, J. f. O. 1887, p. 151.

Mr. Matschie (*l. c.*) speaks of a Bee-eater obtained by Dr. R. Boehm at Lukifuë, which he says differs from *Melittophagus albifrons* in having the breast cobalt-blue, and not cinnamon. He does not, however, give it a name.

(3) MEROPS MENTALIS, nov. subsp., Cabanis, J. f. O. 1889, p. 70.

Under this name Dr. Cabanis describes a Bee-eater from the Camaroons which is, he says, closely allied to *Merops muelleri* (Cassin), but differs in lacking the blue on the chin, this colour commencing only below the chin.

Whilst pointing out the above omissions I must, at the same time, bear witness to the care and accuracy with which Dr. Sharpe has done his portion of the volume in question. To avoid, altogether, omissions and errors is, as I know from experience, an almost hopeless task, and in point of fact, so far as I can see, Dr. Sharpe's only error is in not having referred with sufficient care to the later volumes of the 'Journal für Ornithologie.'

Yours &c.,

Topclyffe Grange, Farnborough R.S.O., Kent,
1st November, 1892.

H. E. DRESSER.

Sir,—On the 15th of September, 1892, Mr. J. C. Gie brought me a duck which his herd had shot at Rictaley, about eight miles from Capetown. I recognized it as the European Shoveller (*Spatula clypeata*); but, to be quite certain on the point, I compared it with the description given in Mr. Seebohm's book on British Birds, and found it to correspond exactly. It was in male plumage, and dissection confirmed the sex. The head and upper parts of the neck were slightly spotted with brown, owing, I presume, to some change of plumage.

The specimen has been presented by Mr. Gie to the South-African Museum. Mr. Roland Trimen, the curator, confirms the identification. Mr. Gie states that his herd, who is an intelligent man, says there were several others, and that two years ago he saw others of the same species.

A few days previously I had seen a duck with a distinctly white breast. I forebore to shoot at it, as I thought it must be a tame bird, none of our ducks having white breasts. The light was bad, and I could not make a closer examination, as the bird rose and flew away. I then saw it was not a tame bird and fired, but without effect.

I may mention that there was no trace on the plumage of the specimen having ever been in confinement, and I know of no one who keeps foreign waterfowl in this part of the Colony, or, indeed, in any other part.

The Shoveller does not appear to have been previously recorded in Africa south of Abyssinia. So distant an extension of its range to the end of the continent is very interesting.

I am, yours &c.,
W. B. Fairbridge.

Capetown,
12th October, 1892.

Report of the British Museum for 1892.—The annual Parliamentary "Return" of the British Museum for 1892 contains a statement as to the progress of the Zoological Department in 1891. Amongst the "principal events" alluded to is the "arrangement of the collection of birds' eggs." This is described as follows:—"In the old

Museum this collection consisted of a small number of specimens of more or less historical value, and of an imperfect series of deteriorated specimens of those of British species, which were exhibited in three table-cases. The first important addition was received in the 'Gould' Collection, purchased in 1881; other miscellaneous series followed; and finally, the magnificent donations of Europæo-Asiatic species by Messrs. Godman, Salvin, and Seebohm, and of Indian eggs by Mr. A. O. Hume, added so much to the number of specimens, and imparted such a great value to this collection, that its systematic arrangement could be no longer delayed. At the same time the formation of a perfect series of British Birds' Eggs for exhibition and consultation by the public had become more and more urgent. A requisite grant having been made by the Lords Commissioners of the Treasury, Mr. Seebohm undertook the work of arranging both the general and the British series, and in the course of this year he has made such progress that about 24,000 specimens, belonging to fifteen families, are catalogued and beautifully arranged in thirteen cabinets, and that the British series can probably be opened to the public in the present year."*

Amongst the most important acquisitions in the Zoological Department are specially mentioned :—

(1) The first instalment of a collection of birds' eggs, comprising upwards of five thousand specimens, belonging to the following families :—*Sphenisciдæ*, *Procellariidæ*, *Alcidæ*, *Laridæ*, *Charadriidæ*, *Turnicidæ*, *Gallinæ*, *Rallidæ*, *Ardeidæ*, *Colymbidæ*, *Podicipetidæ*, *Anatidæ*, *Pelecanidæ*, and *Accipitres*; presented by Henry Seebohm, Esq.

(2) The collection of eggs of *Laridæ*, formed and presented by Howard Saunders, Esq., five hundred and one in number. This is one of the most important collections of this family, all the specimens having been authenticated by the donor himself as regards origin, locality, and other particulars.

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* [A portion of the British series, we may state, is already on view.—Ed.]

Under the special head of "Birds" we find the following remarks:—

"Besides the collection of eggs presented by Mr. Seebohm, 7866 specimens of skins and eggs have been added to this class. Some of these additions have already been mentioned. Of the others the following are the most important:—Twenty-six eggs; presented by P. L. Sclater, Esq. Fifty-four Parrots and fifty eggs, including the type of *Lorius tibialis*, purchased of the Zoological Society of London. Twenty-eight specimens of Game-birds from Argyllshire; presented by F. Menteith Ogilvie, Esq. Fifty-five Game and Wading-birds from Lincolnshire; presented by J. H. Caton Haigh, Esq. Sixty birds from St. Bride's, South Wales; presented by the Hon. W. Edwardes. Twelve specimens from Croatia, including examples of a supposed new species of Shag (*Phalacrocorax croaticus**); presented by Professor S. Brusina. Twenty-three birds from various parts of Asia; presented by Henry Seebohm, Esq. A collection of fifty-six birds from the vicinity of Muscat; presented by Surgeon-Major A. S. G. Jayakar. Four hundred and eighteen specimens collected by the late Dr. Stoliczka in Yarkand, during Forsyth's second expedition in 1874; received in exchange from the Indian Museum, Calcutta. A pair of Red-billed Curlew (*Ibidorhynchus struthersi*), together with thirty-seven other birds and nests, from the Pamir; presented by St. George Littledale, Esq. Ninety-six specimens from Corea, including an example of *Thriponax kalinowskyi*, a large Woodpecker, new to the collection; presented by C. W. Campbell, Esq. Thirteen specimens from the Shan Hills, Burmah; presented by Eugene W. Oates, Esq. A hundred and four specimens of birds, collected during the Steere Expedition to the Philippine Islands, containing types of *Cryptolopha nigrorum* and *Abrornis olivacea*; obtained by exchange. Eighty-two specimens from the above-named expedition, containing examples of eighteen species new to the collection; purchased. A pair of *Loriculus bonapartii*, a species of Lorikeet from the Sulu Islands, new to the collection; presented by the Hon. Walter Rothschild. A tail-feather of an Argus Pheasant, the type of *Argus tripunctatus*; presented by Edward Bartlett, Esq. An example of a rare species of Lark (*Spilocorydon hypermetrus*) and of a Bunting (*Fringillaria poliopleura*) from Shoa, both new to the collection; received in exchange from the Turin Museum. Thirty-two specimens from St. Thomas' and Prince's Islands, West Africa, comprising examples of six species new to the collection; presented by Professor Barboza du Bocage. Sixteen birds from East Africa, including six new to the collection; received in exchange from the Berlin Museum. Ten birds from the Pacific Islands, including examples of two species of Petrel new to the collection; presented by J. J. Lister, Esq. The type specimen of a new species of Petrel (*Œstrelata cervicalis*) from the Kermadec Islands; presented by Captain Carpenter. The type of *Erythrura regia*, a Weaver Finch from Api, New Hebrides; presented by P. L. Sclater, Esq., F.R.S. Specimens of three Kingfishers of the genus *Tanysiptera* (*Tanysiptera obiensis*, *T. emiliæ*, and *T. ellioti*), new to the collection, received in exchange from the Leyden Museum. Two specimens of a Kingfisher (*Halcyon albicilla*) and of a new species of Honey-sucker (*Cleptornis marchii*) from the Marianne Islands, both new to the collection; presented by the Paris Museum. Nine specimens of Buzzards, and thirteen other specimens from Montana and Dakota; presented by E. S. Cameron, Esq. Three hundred and twenty skins of birds from Chili and Tarapacá, including a rare Avocet (*Recurvirostra andina*) and examples of several other species new to the collection; presented by H. Berkeley James, Esq. Thirty-four nests and eggs from Barbados, presented by Colonel H. W. Feilden, R.A."

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* [Orn. Jahrb. ii. p. 27.—Ed.]

The Bird-Collections in the Oxford University Museum.—In last year's volume of this journal (Ibis, 1892, p. 187) I called attention to the state of the collection of birds in the Oxford University Museum. I have lately paid another visit to the Museum, and was pleased to find that some progress has been made towards bringing the birds into a more satisfactory state. The boxes of skins which I found "inaccessible" in 1891 have been opened and examined, and rough lists have been made of their contents. They can now be inspected by any one desirous of seeing them. But the specimens are still, in many cases, stored in huge unmanageable chests, which are kept in several different parts of the building. What ornithologists would wish is that all the unmounted skins of the various collections, probably some 4000 or 5000 in number, should be brought together into one room, labelled and classified, and arranged in a uniform series, either in cabinets or in convenient boxes, so that all the specimens of any particular group might be seen together. There is a vacant "upper chamber" which would answer for this purpose very well, if the Delegates of the Museum could be induced to devote it to this object. Besides the Burchell Collection, which, I believe, was inherited from the old Ashmolean Museum, and which probably contains many "types" long lost sight of, there are series of skins from Europe and Australia (*Reed*), from British India (*Lord Northbrook*), from New Guinea (*Lawes*), and from Borneo (*Treacher*). There are also a European set belonging to the Hope Collections, and the general collection of the late Sir Harford Brydges. All these should be brought together and amalgamated into one series.—P. L. S.

The Godwin-Austen Collection of Birds.—Lt.-Col. H. H. Godwin-Austen, F.R.S., wishes to dispose of his collection of N.E. Indian birds. It contains about 3730 skins, in good condition, representing 592 species, and was formed in the years 1868–1877 by himself and by collectors under his orders during his service with the Topographical Survey in the Garo, Khasi, Jaintia, North Cachar, Naga, and Munipur Hills, in the plains of Sylhet, Cachar, and Mymensing, and in the Assam Valley as far east as Sadya. There are also series from the Dafla and Mishmi Hills, north of the Brahmaputra. The exact localities are on the labels, and the dates and sexes are given in most cases. There are 18 types or typical specimens in the collection. Col. Godwin-Austen's address will be found in the List of Members of the B. O. U.

Birds of Antigua, W.I.—In a paper read before the Zoological Society of London on the 14th June, 1892*, I remarked that, so far as I knew, no ornithological collector had previously been in Antigua, and that its ornis was "entirely unknown." In making these statements I much regret to find that I had overlooked one of Mr. Cory's papers on West Indian birds, published in 'The Auk' for 1891 (p. 46). From this it appears that Anguilla was visited by Mr. Winch, Mr. Cory's collector, in 1890, and that examples of 13 species of birds were procured there. Of these 8 are identical with 8 of the species in my list of those obtained by Mr. Elliot, and 5 are different. Adding these 5 to my list of 16, we have 21 birds now known to occur in Anguilla. These are all well-known West-Indian species, and none of them are of special interest.—P. L. S.

The Preservation of Native Birds in New Zealand.—In 'Nature' of September 22nd last† will be found a memorandum drawn up by Lord Onslow, the late Governor of New Zealand, and presented to both Houses of the General Assembly, which is of great interest to ornithologists. It relates to a proposal for the preservation of the native birds of New Zealand, so many of which are now threatened with extermination, not only by the increase of population, but still more by the attacks of cats, stoats, weasels, and other animals lately introduced into the colony. Lord Onslow comes to the conclusion that the only way to preserve the indigenous birds against such ravages is to set apart suitable islands for the purpose, and to place them under very strict protective regulations. After careful enquiries upon the subject, it has been ascertained that the two most readily available islands for this purpose are Little Barrier Island in the north and Resolution Island in the south. As regards the first of these islands, which is in the Gulf of Hauraki, the land is still part of the Maori reservation, but negotiations are in progress for its acquisition, and Lord Onslow urges the Assembly to lose no time in bringing them to a conclusion. Resolution Island, which is situated on the south-west coast of Otago, has already been proclaimed a reserve for the native fauna and flora, so that it only remains to take proper steps to stock it with the birds which it is desired to preserve. Lord Onslow suggests the various species of Kiwi (*Apteryx*) and the Kakapo (*Stringops habroptilus*) as being pre-eminently suitable for this island, which is supposed to be the final refuge of *Notornis mantelli*, if it really still exists. To these he proposes to add, amongst other species, the Huia-bird (*Heteralocha gouldi*), which is at present confined to a limited area in the North Island. We are quite sure that all ornithologists will agree in applauding Lord Onslow for the good work he has thus inaugurated, and we trust that Lord Glasgow, his successor in the Government of New Zealand, will not fail to carry it on.

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* See P. Z. S. 1892, p. 148.

† See 'Nature,' vol. xlvi. p. 502.

Surnames taken from Birds.—In reference to the enquiry (Ibis, 1892, p. 579) as to the locality of the original spot called "The Gled's-stones," whence the surname "Gladstone" was formed, one of our correspondents kindly sends us a little book by Mrs. Oliver (of Thornwood), written in 1878 for the Hawick Archæological Society, and entitled "The Gledstones and the Siege of Coklaw." From this it appears that the Premier is descended from a younger branch of the "Gledstones of Coklaw," also called "Gledstones of that Ilk." But it would seem that that Ilk was not in the neighbourhood of Hawick, where Coklaw Castle once stood, but in Lanarkshire, whence the family migrated into the neighbourhood of Hawick some five hundred years ago, and that the estate of "Gledstones" in Lanarkshire passed out of the hands of "Gledstone of that Ilk" about the middle of the sixteenth century, and became the property of a Sir William Menzies. It is therefore in Lanarkshire that the original "Gleds' Stones," whence the name "Gladstone" is derived, should be sought for.

New Ornithological Periodical.—Dr. Ant. Reichenow announces the commencement with this year of a new ornithological periodical, to be called 'Ornithologische Monatsberichte,' and to be published by Messrs. Friedländer of Berlin, under his editorship. The subscription-price will be six marks.

Prince Albert's Lyre-bird in Captivity.—From 'The Northern Star and Richmond and Tweed Rivers Advocate,' published at Lismore, N. S. W., on October 8th, 1892, of which some kind correspondent has sent us a copy, we learn that Mr. A. P. Goodwin, of that town, has been fortunate enough to obtain a live specimen of the Lyre-bird (*Menura alberti*) belonging to that district. Several specimens of *Menura superba* have been brought alive to England and exhibited in the Zoological Society's Gardens, but we are not aware that *Menura alberti* has ever been seen in captivity before.

The British Museum Catalogue of Birds.—Three more volumes of the great Catalogue of Birds are in a forward state, and will probably be published in the course of the year. The 21st volume, devoted to the Pigeons, has been undertaken by Count Salvadori, than whom no ornithologist could have been found more competent for this arduous task. Count Salvadori has been in London all the autumn at work upon it, and has only recently returned to Turin. The 22nd volume, containing the *Pterocletes*, *Gallinæ*, and *Hemipodii*, is being prepared by Mr. Ogilvie Grant. Dr. Bowdler Sharpe is at work on the 23rd volume, which, we understand, will contain the *Alectorides*, *Fulicariæ*, and *Limicolæ*. When these three volumes are complete, we reckon that one or two volumes more will finish the work. It is to be hoped, however, that a good index will not be forgotten. The Editor of 'The Ibis' has already made an index of the first 20 volumes in MS., and finds it extremely useful.

Naturalists Abroad and at Home.—Mr. O. V. Aplin has arrived at his collecting-station—an estancia in the Department of Soriano, in Uruguay, between the rivers Monzon and Rio Grande. It is 66 miles from the nearest railway-station, but seems likely to be an excellent place for his purpose, with a varied surface of wood and water, and "birds abundant."

Mr. R. C. L. Perkins, the naturalist sent out by the Committee for the Zoological Exploration of the Sandwich Islands, was in the district of Kona, in Hawaii, at the date of his last letters. We owe the Committee our best thanks for allowing us to publish Mr. Perkins's very interesting notes on the avifauna of this district (see above, p. 101).

We learn with great satisfaction that Mr. J. G. Gregory, of the Geological Department, British Museum, has received the permission of the Trustees to accompany, as naturalist, Lieut. Villiers's new expedition into the interior of Eastern Africa. The original intention of this expedition was to proceed up the Juba, but we are told that at this season the Juba is unnavigable for want of water. The party will, therefore, probably go up the Tana to Mount Kenia, and thence to Lake Rudolf, returning through Northern Somaliland. There can be no doubt that this route passes through a most interesting and, zoologically, almost unknown district, and that Mr. Gregory has a splendid field for his investigations.

Three of the Dundee whalers which are now in the Antarctic Seas carry surgeons specially selected for their scientific qualifications. Mr. W. S. Bruce, the surgeon of the 'Balæna' (Capt. Fairweather), has a very complete equipment for biological collecting of every description, and a "large and representative collection of birds" is expected to be obtained. Good series of the Penguins and Petrels of the South Polar Ocean will add much to our knowledge of these groups.

Dr. T. Jeffery Parker, F.R.S., of Dunedin, Otago, New Zealand, who is now in this country, will read a paper on the Cranial Osteology, Classification, and Phylogeny of the

Moas (Dinornithidæ) at the Zoological Society's Meeting on February 14th.

Obituary. Harry Berkeley James and Robert W. Shufeldt.—Harry Berkeley James was born on the 9th of March, 1846, at Walsall, Staffordshire, in the house of his father Mr. Frank James, of the same place, and was educated at Springhill School, Southampton. In 1867 he went out to South America as clerk in the house of Messrs. Gunston and Edmundson, of Valparaiso. After four years' work at Valparaiso he entered the mercantile house of Messrs. Anthony Gibbs and Co., and was appointed manager of one of their large nitrate establishments, called La Limeña, near Iquique, then in Peru, but since annexed to Chili. After four years' residence in this establishment, which is situated on the high ground of the interior, about thirty miles inland, he resigned his post and went into business as a merchant at the port of Iquique. On May 9th, 1877, the frightful earthquake, which ruined a great part of that town, took place. This was accompanied, as is usual in such cases, by a huge seismic wave, which completed the destruction commenced by the earthquake. James was as nearly as possible drowned by the cataclysm; he was immersed waist-high in water, and narrowly escaped by running up to some higher land. His house at Iquique and all its contents were carried into the sea, and he lost everything he possessed there except the clothes that he was wearing. The site of the house was so completely cleared that after the flood was over it could not be distinguished from the rest of the beach.

In 1878 James made a journey into the interior of Peru, starting from Lima by the Oroya railway, and penetrated on mule-back, by a rough and dangerous route, as far as Chanchamayo. During this excursion, besides making general observations on the natural history of the country, he collected a large series of Lepidoptera, to which group he at that time paid special attention. In April 1879 war was declared between Peru and Chili, and in the following October, business being at a standstill, James left Iquique for England, making a short stay in the West Indies on his way home.

Upon his return to England, James spent several months on a collecting-tour in Sutherlandshire, and in October 1880 married Miss Lucy Constance Clarke, the daughter of a near neighbour in Staffordshire.

Early in 1881, accompanied by his wife, James returned to his business at Iquique; but, owing to other claims on his attention and to the unattractive character of the surrounding country, was able to do very little in the way of natural history. Two years later, however, on moving to a country-house (called Las Salinas) in the neighbourhood of Valparaiso, he found himself in a better position for his favourite pursuit. Here he began his collection of Chilian birds, which were sought for both round his home and in the neighbouring Cordilleras. To these he made frequent expeditions, often camping out at night in order to effect a more complete exploration of the surrounding ranges. Besides birds and their eggs, James also collected butterflies, moths, beetles, and other insects.

In 1885 James prepared and printed a pamphlet of sixteen pages containing a list of the birds of Chili*. In this memoir are arranged in three parallel columns (1) the scientific names of Chilian birds adopted by Mr. Sclater in his 'List of Chilian Birds,' published in 1867; (2) the names employed in the Santiago Museum; and (3) the corresponding vernacular names used by the natives.

In 1886 James returned finally to England, having realized largely by the nitrate trade, in which he had been extensively engaged, and two years later purchased as a residence the well-known property called "The Oaks," near Epsom, in Surrey.

In order to complete his series of Chilian birds James, before he left Valparaiso, had arranged with Carlos Rahner, a German naturalist in the Museum of Santiago, to make a special expedition into the interior of Tarapacá. The bird-skins obtained on this occasion were brought to England, and described by the Editor of this Journal in the 'Proceedings' of the Zoological Society[*]. Amongst these a fine novelty was a new three-toed Flamingo, which was dedicated to James as *Phœnicopterus jamesi*.

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* 'List of Chilian Birds,' compiled by Harry Berkeley James, F.Z.S. Valparaiso, 1885.

Again, in 1889, James, acting on the Editor's suggestion, sent out another collector, Mr. Ambrose A. Lane, to explore various parts of the Chilian Republic. Mr. Lane first visited Tarapacá[†], and afterwards several places in the southern provinces, but was forced to return home before his work was accomplished by the outbreak of the Chilian revolution.

James was attached to the study of Natural History from his boyhood, and took the keenest interest in collecting and observing birds. He was also an excellent horseman and ardently fond of outdoor sports. He was a Fellow of the Linnean, Zoological, and Royal Geographical Societies, and was elected a Member of the British Ornithologists' Union in 1886. He died at his home in Surrey on the 22nd July, 1892. All his collections of birds and eggs have been placed in the British Museum.

Robert W. Shufeldt.—With much regret we see recorded in the last number of 'The Auk' the death at an early age of Robert W. Shufeldt, the son of our much-esteemed friend and contributor of the same name. Mr. Shufeldt was a student of Marietta Academy, Ohio, and was Taxidermist and Collector of the Natural History Museum of Marietta College. This enthusiastic young savant, of unusual promise, was accidentally drowned in the Ohio, near Marietta, on July 11th last, whilst on a collecting trip for birds for his Museum.

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[*] See "List of a Collection of Birds from the Province of Tarapacá, Northern Chili," by P. L. Sclater (P. Z. S. 1886, p. 395).

[†] See article "On a second Collection of Birds from the Province of Tarapacá, Northern Chili," by P. L. Sclater (P. Z. S. 1891, p. 131).

THE IBIS.

SIXTH SERIES.

No. XVIII. APRIL 1893.

XIII.—*On the Birds of Aden.*

By Lieut. H. E. Barnes, F.Z.S.

[Concluded from p. 84.]

64. Treron, sp. inc.

I neither saw nor heard of a Green Pigeon during the time I was in Aden, and suspect that its occurrence (recorded by Major Yerbury, Ibis, 1886, p. 18) is somewhat exceptional.

65. Columba livia, Bonn.

These Pigeons are abundant, breeding in hundreds in the caves above the tanks and many other places. They are seldom or never interfered with.

66. Turtur senegalensis (Linn.).

The Little Brown Dove is a common permanent resident in Aden, breeding freely at the tanks and also on the rafters in the open verandahs of the dwelling-houses, notably in the one previously alluded to as being in the occupation of Captain Light.

67. Turtur risorius (Linn.).

The Ring-Dove is another rather common permanent resident.

68. Œna capensis (Linn.).

The Long-tailed Dove is found occasionally at Huswah and Shaik Othman, but I have never seen it in Aden itself.

69. Pterocles exustus, Temm.

The Common Sand-Grouse is very abundant inland, and is netted in large numbers by the Arabs and brought into Aden for sale. I did not measure any, but they struck me as being of very small size compared with the birds we get in India.

70. Pterocles lichtensteini, Temm.

Lichtenstein's Sand-Grouse is not uncommon inland, but does not occur in such numbers as the Common Sand-Grouse; I do not think that any remain to breed, as I have not seen or heard of them, except in the cold season. One shot on the 27th October measured as follows:—Length 10·8 inches, expanse 21, wing 6·7, tail 3, tarsus 1·1, bill at gape 0·66, bill at front 0·54. Bill fleshy brown, paler beneath; feet dull orange-yellow; iris brown.

71. Caccabis melanocephala (Rüpp.).

The Large Black-headed Chukar is common in the ravines at the base of the hills, some distance inland. They also frequent the clayey cliffs along the river-banks, especially near pools of water, the river-bed being generally dry.

They are often brought in alive by Arabs, and command a ready sale, as they form an agreeable addition to the meagre fare generally obtainable in the settlement, especially if kept a little while and allowed to get fat—a process which does not take long, as they are very tamable birds.

They are permanent residents, laying their eggs about March. Early in June an Arab offered to sell me some half-grown birds which he said he had caught near the river not far from Huswah.

72. Caccabis chukar (J. E. Gray).

The evidence regarding the occurrence near Aden of this bird is still inconclusive. Many times I have heard of specimens having been shot, but in each instance when I have been able to inspect the birds they have proved to belong to the Large Black-headed kind.

The Arabs assert that there is a smaller Chukar, and Captain Onslow, R.E., who has been in Aden some time, informed me that the year previous he had had five sent to him. He knows the bird well and was quite certain about them; at the time he had seven of the larger kind which he had recently purchased, so I think there can be little doubt that the Indian Chukar does occur at Aden, but it would be much more satisfactory if a specimen could be procured.

73. Ammoperdix bonhami (Fraser).

The Seesee Partridge occurs in the hills in the vicinity of Aden, but whether it is common or not I cannot say; the only one obtained was bought from an Arab, and was mistaken by the purchaser for a Chukar, which he knew I was on the look-out for. This bird was sent to the Zoological Gardens, London, and it was not until its arrival there that it was correctly identified, as I was at the time seriously ill from the effects of an unfortunate accident, and could not examine it.

The Arab who sold it says he caught it among the hills, along with two others, which had since died; he had in his possession at the time about twenty Sand-Grouse and a few Common Quail.

74. Coturnix communis, Bonn.

The Common Quail is found occasionally in Goldmore Valley and also in the Shum-shum Gorge; but these birds do not remain long, staying apparently only to rest themselves.

Inland during the cold season they are very common, and are caught in some numbers by the Arabs. They are generally kept for fighting.

The following dimensions were taken from a female shot on 8th March:—Length 8·2 inches, tail 1·4, tarsus 1·1, bill from gape 0·6, bill from front 0·4. Bill horny brown; feet pale yellowish white.

75. Coturnix delegorguei, Deleg. Voy. l'Afr. Austr. ii. p. 615 (1847).

This Quail is equally abundant and occurs in the same localities and at the same season as the last. It is, if possible, even still more pugnacious, and is a great favourite with the Arabs.

76. Turnix lepurana (Smith).

This is the only species of Button Quail that I have met with; it is not uncommon during the cold season, but, so far as I could learn, does not remain to breed. I have not met with any in Aden itself.

The following are the measurements carefully taken from a bird in the flesh:—Length 6·15 inches, expanse 11, wing 3·4, tail 1·4, tarsus 0·9, bill at gape 0·6. Bill bluish, dusky on culmen; legs pale yellow; iris yellow.

77. Eupodotis arabs (Linn.).

This Bustard appears to be fairly common inland. I have not been fortunate enough to meet with one alive, but have seen several brought in for sale.

I have not seen any other Bustard, but the Arabs frequently speak of one or two others.

78. Houbara macqueeni (J. E. Gr.).

An Arab sold me two eggs of a Bustard in March, unfortunately just as they were on the point of hatching. They were exactly similar to eggs of the Houbara received from Persia, so that I think there can be little doubt of its occurrence somewhere in the neighbourhood.

These eggs were broadish oval in shape, pointed a little at one end, measuring 2·5 inches in length by 1·8 in breadth. The ground-colour was a darkish drab, showing in a good light a slightly reddish tint; the markings consisted of clouds and blotches of blackish and reddish brown.

79. Cursorius, sp. inc.

The Courser alluded to by Major Yerbury still remains unknown. I met with this bird on one occasion only, on the shore between Huswah and the Barrier Gate, but failed to secure the specimen. It was a solitary individual and was running rapidly along the beach, occasionally stopping, for no purpose that I could see except to stretch out its neck and spread its wings, and just as suddenly starting off again.

I think this bird was feeding on small shrimps, the sea at this place being simply swarming with them; so much so that a couple of Arabs, with a small dhotie (sheet), caught over a bushel at a time, by simply holding the corners and dragging it through the water for a yard or so.

80. SQUATAROLA HELVETICA (Linn.).

The Grey Plover occurs during the cold season in moderate-sized flocks. They are of course confined to the sea-shore, very rarely coming any great distance inland. They seem always to keep in the open, and, as they are excessively wary, are difficult to shoot.

One shot in December on the beach at Goldmore Valley measured as follows:—Length 11·75 inches, expanse 24, wing 7·7, tarsus 1·7, tail 2·9, bill at front 1·2, bill at gape 1·3. Bill, legs, and feet black; iris brown.

All the birds obtained were in winter plumage.

81. CHARADRIUS PLUVIALIS, Linn.

I have never met with the Golden Plover at Aden; twice I have had reputed birds sent me, but on both occasions I found them to be Grey Plovers.

Major Yerbury says, "The Golden Plover is an occasional cold-weather visitant;" and he is very possibly right, as the Officers of the Connaught Rangers were very positive that they had shot the Golden Plover on several occasions.

82. ŒDICNEMUS SCOLOPAX (S. G. Gm.).

The Stone-Curlew occurs occasionally in the vicinity of Aden during the cold season. I have never seen one in the hot weather, neither have I ever met with it in Aden proper, by which I mean inside the Barrier Gate. They are fairly common at Little Aden, on the opposite side of the harbour.

83. ÆGIALITIS MONGOLICA (Pall.).

This Sand-Plover is occasionally met with during the cold weather; one shot on the 2nd November measured as follows:—Length 7·5 inches, expanse 14·75, wing 5, tail 1·8, tarsus 1, bill at front 1. Bill black; legs blackish; iris very dark brown, almost black.

84. ÆGIALITIS CANTIANA (Lath.).

The Kentish Plover is not uncommon. I obtained specimens from the 25th September to the 15th April. One measured in the flesh:—Length 6·7 inches, expanse 13·5, wing 4·4, tail 1·95, tarsus 1·1. Bill black; legs and feet blackish; iris brown.

85. STREPSILAS INTERPRES (Linn.).

The Turnstone is very common during the cold weather, frequenting the beach both in Aden itself and in the neighbourhood. Those obtained in September were in winter plumage, but one shot late in May (the last one I met with) was commencing to assume the summer plumage. The following are the dimensions of one shot on the 29th September:—Length 8·75 inches, expanse 17·5, wing 5·8, tail 2·3, tarsus 0·85, bill at front 0·8, bill at gape 0·9. Bill black; legs and feet dusky red; iris deep brown.

86. DROMAS ARDEOLA, Payk.

The Crab-Plover is a regular visitor during the cold season, appearing in the early part of October. I saw one as late as the 5th of May in Goldmore Valley, and felt sure that it had a nest near at hand; but a close and persevering search was not rewarded with the success it deserved.

This bird is known to breed in the islands in the Persian Gulf (from which locality I have received eggs), laying a single white egg in a hole burrowed in the sand, so that my assumption is not so very unreasonable.

The egg is very large for the size of the bird.

87. HÆMATOPUS OSTRALEGUS, Linn.

As noted by Major Yerbury, Oyster-catchers remain at Aden all the year round. Like him I doubt the fact of their breeding here, simply because I have never met with any young birds; but when we think of the many all but inaccessible creeks in the vicinity where the solitude is seldom broken by the voice of man, it is very possible they may do so. Most undoubtedly they are much more numerous in the cold weather.

88. Gallinago cœlestis, Frenzel.

The Common Snipe is not very abundant, but at times a small bag can be made along the bed of the river. This is the only Snipe that I have personally examined, but I have no doubt that the Jack Snipe occurs also.

89. Terekia cinerea (Güld.).

The Avocet Sandpiper is occasionally met with during the cold season. It frequents the mudbanks in the harbour at low tides, and is very wary and difficult to shoot.

90. Numenius arquata (Linn.).

The Curlew is abundant in the cold season, and is occasionally met with throughout the year; but I think that these are only young and unpaired birds, and do not breed anywhere in the neighbourhood.

91. Numenius phæopus (Linn.).

The same remarks apply equally well to the Whimbrel, except that it is much more common.

I took careful measurements of both the Whimbrel and Curlew, but cannot now find them.

92. Tringa alpina, Linn.

The Dunlin is fairly common during the cold season, remaining quite up to the end of May, by which time they commence to assume the summer plumage.

93. Tringa minuta, Leisl.

The Little Stint is often met with during the cold weather.

94. Calidris arenaria (Linn.).

The Sanderling occurs also in large flocks during the cold season.

95. Tringoides hypoleucus (Linn.).

The Common Sandpiper occurs on the seashore wherever it is at all rocky; it is more abundant from September to May; but individual birds are met with occasionally during the cold weather, though I do not think they breed.

A disabled bird having a damaged wing frequented Captain Light's compound during the month of April; what brought the bird there I cannot say, as his bungalow is in the very middle of the Crater.

96. Helodromas ochropus (Linn.).

The Green Sandpiper is very abundant, occurring in immense flocks on the mud islands in the harbour, but only during the cold season.

97. Totanus calidris (Linn.).

The same remark applies to the Redshank.

98. Crex pratensis, Bechst.

The Land-Rail is one of the last birds one would expect to meet with on a barren spot like Aden, yet I have on several occasions procured them. The first was on the 20th August, another on the 24th of the same month, one on the 17th of September, and the last on the 15th of February. The first was caught alive, and I did not kill it till next morning, as I was too busy to stuff it; it kept up a low plaintive cry, like a young kitten, the whole night through.

I fancy all these birds were introduced into Aden from the interior in the following manner:—After the jowaree crop is reaped, the stalks or kirbee (often seven or eight feet long) are tied up in large bundles, which remain in the fields sometimes for weeks together, and form excellent hiding-places for the birds during the day. Early in the morning when the camels are being loaded with these bundles of kirbee for transport to Aden, where it is extensively used as fodder, the birds do not fly out, as they keep very close, but as soon as the bundles are opened for sale they escape. In some of the valleys there are patches of salsola, and, for a short time after rain, wild portulaca springs up and covers the otherwise bare hillsides with verdure, but it has a very brief existence. With these exceptions, there is absolutely no cover for Land-Rails, and of course they are soon discovered and caught. On the mainland there is plenty of cover, and some few birds may possibly straggle in thence. It is only at the Crater where forage is sold, and there only that I have found the birds, although there are places at Steamer Point and in Goldmore Valley more suited to them. I give the measurements of one shot on the 17th September, which was a female:—Length 9·62 inches, expanse 16·44, wing 5·06, tail 1·66, tarsus 1·61, bill at front 0·67, bill at gape 1. Legs and feet dusky pink; bill fleshy, dusky on culmen; iris dark hazel-brown.

99. Ardea cinerea, Linn.

The Common Heron occurs sparingly during the cold season. It is very shy and difficult to approach, occurring singly on the sea-beach, where it may occasionally be seen fishing in shallow water.

100. Ardea alba, Linn.

The Large White Heron is more often met with, especially in the neighbourhood of the salt-pans, between the Isthmus and Shaik Othman.

Its snow-white plumage makes it a very conspicuous object, and it is in consequence often detected in places where its more sober-coloured relative would escape unnoticed. It is very wary, taking wing long before one can get within range.

101. Ardea, sp. inc.

I have not met with the Egret alluded to by Major Yerbury.

102. Ardea asha, Sykes.

I often met with a bird which I think was the Ashy Egret; it was always alone, frequenting the rocks in sheltered places on the sea-shore. I have frequently passed an hour watching the bird feeding on small shell-fish and shrimps. By remaining perfectly still, under the shadow of a rock, one has an excellent opportunity of observing them, as they come within a few yards, but at the least movement or noise they rise slowly on the wing and fly away seawards.

103. Ardeola podiceps (Bp.).

On the 12th October I purchased a bird from an Arab fisherman, which has been doubtfully identified as of this species by Dr. Bowdler Sharpe. It had probably been in confinement some time, and was in bad condition, most of the primaries having apparently been pulled out, some time before, to prevent its escape. The legs and feet were malformed, the bird having most likely met with some injury when young, and in addition it was an immature specimen.

The measurements were as follows:—Length 14 inches, wing (imperfect) 3·5, tail 2, tarsus 1·75, bill at front 1·75, bill at gape 2·25. Iris greenish yellow; bill brownish horny on top, greenish yellow beneath; legs and feet oily green.

104. PLATALEA LEUCORODIA, Linn.

The Spoonbill only occurs as a somewhat rare cold-weather visitor.

105. IBIS, sp. inc.

I have been unable to procure a specimen of the dark-coloured Ibis observed by Major Yerbury.

106. PHŒNICOPTERUS ROSEUS, Linn.

The Flamingo is often met with during the cold weather, occurring in small flocks of six or eight along the sea-shore. It is still more often seen near the salt-pans.

107. ANAS BOSCHAS, Linn.

A flock was seen, early in the cold season, near Huswah, but none were shot.

108. QUERQUEDULA CRECCA (Linn.).

109. QUERQUEDULA CIRCIA (Linn.).

Both the Common and Blue-winged Teal are frequently met with during the cold season near Huswah, Khor Maksor Creek, Little Aden, and other places.

Several other species of Duck occur, but as I have not had an opportunity of examining them, I am unable to give their names.

110. PODICEPS NIGRICOLLIS, Brehm.

I obtained a specimen of the Black-necked Grebe off Seera Island on the 2nd October.

I have often seen what I took to have been others, but they were always at too great a distance to identify with any certainty.

My specimen, which was a male, measured as follows:—

Length 12 inches, expanse 24·5, wing 5·3, tarsus 1·65, bill at front 0·9, bill at gape 1·2. Bill slaty blue, bluish beneath; legs and feet outwardly black, inwardly a peculiar leaden blue or greenish, dusky at joints.

111. Puffinus persicus, Hume.

This Shearwater is not uncommon in the vicinity of Aden; it is, however, rather difficult to procure, keeping, as a rule, well out to sea. The first specimen I obtained, after surviving a chapter of accidents, mysteriously disappeared. I had placed it on a low wall to dry with several other skins, and never saw it afterwards; it was most probably carried off by a Kite.

Another was found by my eight-year-old son, floating dead in the sea, in Holket Bay. He recognized it as the bird his father was so sorry at losing, and brought it home.

The following were its dimensions:—Length 11·2 inches, expanse 26·5, wing 8·6, tail 3, tarsus 1·4, bill at front 1·2, bill at gape 1·6. Bill plumbeous black; legs and feet pearly or opalescent white, claws and web between toes black.

I feel sure that the birds pointed out to passengers on board vessels sailing in these seas as "Mother Carey's Chickens" belong to this species.

112. Larus, sp. inc.

I failed to procure a specimen of the Black-backed Gull alluded to by Major Yerbury, although I have occasionally seen it.

113. Larus ichthyaëtus, Pall.

The Great Black-headed Gull is not uncommon, but does not occur in such large flocks as some of the others do. It disappears during the hot season, probably for breeding purposes only, as it is absent but a short time.

114. Larus brunneicephalus, Jerd.

The Brown-headed Gull is fairly numerous. One caught on the 25th January became quite tame in a couple of days, and would have made a capital pet, only the dogs could not be induced to let it alone; they worried it so much that at last I was compelled to make away with it. Its wings having been clipped, it could not keep out of their way.

I give the measurements of the only two specimens I shot:—Length 16·5, 16 inches, expanse 39, 40, wing 13·4, 13, tail 5·5, 5·5, tarsus 1·8, 1·75, bill at front 1·3, 1·28, bill at gape 2·2, 2·23. Bill and feet dusky red; iris yellow-brown.

115. LARUS RIDIBUNDUS, Linn.

Not uncommon; one caught on a fishing-line on the 12th January measured:—Length 14·75 inches, expanse 34, wing 11·4, tail 4·2, tarsus 1·8, bill at front 1·3, bill at gape 2·12. Bill and feet red, tipped dusky; iris brown.

116. LARUS HEMPRICHI, Bp.

Hemprich's Gull is the commonest Gull in Aden harbour, and must breed not very far away; they are much less common during the months of June, July, August, and September than at other times. I have eggs from the Persian Gulf; but I am of opinion that they also breed in the vicinity of Aden, as even in the hot season, when they are presumably away breeding, a flock will often appear and remain for an hour or so.

At low tide they frequently assemble in huge flocks of some hundreds, standing so closely packed together that if a gun were discharged amongst them some fifteen or twenty would be shot; they remain packed in this fashion for hours together, scarcely one moving, until the fishing-boats return, when they rise in an apparently confused crowd, and with clamorous cries hover over the boats, waiting for the fishermen to throw out their dead and unused bait, which consists, as a rule, of sprats and other small fishes. These flocks do not consist exclusively of Hemprich's Gull; on one side may be fifty or a hundred of *Larus ridibundus*, and here and there, conspicuous by their greater size, may be seen small parties of the Great Black-backed Gull.

A male shot on the 28th January measured:—Length 17 inches, expanse 44, wing 13, tail 5, tarsus 2, bill at front 1·8, bill at gape 2·3. Bill bluish, black at tip; legs and feet leaden black; iris dark brown.

117. STERNA ALBIGENA, Reichenb.

The White-cheeked Tern is not very common. I saw a pair at Seera on the 28th May, and on one or two occasions since.

118. Sterna minuta, Linn.

The Little Tern is not common; I have seen it in June both on the Malla Beach and near Seera Island. I did not succeed in shooting one on either occasion, and they may possibly be *Sterna saundersi,* that is so common and breeds so freely at Kurrachee. Personally I am inclined to think that the differences between *Sternæ minuta, sinensis, saundersi,* and *gouldiæ* are so slight as hardly to merit specific distinction.

119. Sterna bergi, Licht.

The Large Sea-Tern is very common, and breeds on many of the islands in the neighbourhood.

Dr. Bartlett procured a lot from an island near the French settlement of Obok, many of which he gave me; and I obtained a large number from an island near the Somali coast in the month of August.

The eggs are indescribably beautiful. They are broadly oval in shape, very much pointed towards one end, but variations from the type are not uncommon; they have no gloss, but the texture of the shell is firm and compact. The ground-colour varies a good deal—white, greenish and pinkish white, pale yellowish, pale buff, pinkish stone-colour, and warm salmon-pink all occur.

The markings are also very variable, consisting of specks, spots, streaks, blotches, and jagged lines of a deep burnt-sienna brown, in some eggs almost black; the secondary markings are the usual pale washed-out underlying clouds and blotches of lilac and faint inky purple.

The full number of eggs in a clutch is three, but occasionally two fully incubated eggs will be found. There is no nest, the eggs being placed in depressions scraped in the sand. They vary a good deal in size, but not more so than those of most large Terns do. The average of a large number was 2·45 inches in length by about 1·7 in breadth.

These Terns fly with their beaks pointing straight down, and follow shoals of small fish, hovering in the air just above them, plunging into the water at short intervals with some force, each bird generally emerging with a small silvery fish in its beak, which it disposes of by a backward jerk of the head, when the fish slips down its throat. If the bird has young ones in the neighbourhood, instead of swallowing its finny prey, it flies straight away with it.

120. Sterna media, Horsf.

The Lesser Sea-Tern is still more plentiful, breeding in great numbers on the adjacent islands. I procured a splendid series of eggs.

The full complement of eggs is three, and they are laid on the bare ground, after the manner of those of its larger relative. They are oval in shape, occasionally moderately broad, and are pointed at one end. The texture is fine, but glossless. The ground-colour is white, rarely buffy white. The primary markings, which, as a rule, are thinly scattered over the whole surface, are very dark in colour, almost black; there are generally one or two large blotches of this colour, blackish in the centre, but becoming reddish brown at the edges; the smaller spots, too, are often surrounded by a kind of reddish nimbus, which adds much to the beauty of the egg. The secondary markings are pale lilac or faint inky purple, and have the appearance of lying beneath the surface of the shell, but they are few in number and often not very apparent.

The eggs vary greatly in size, from 2·36 inches to 1·9 in length and from 1·5 to 1·37 inch in breadth; but the average of a very large series, carefully measured, was 2·15 by 1·44.

121. Sterna anæstheta, Scop.

The Panayan Tern is not uncommon; a female shot on 17th December measured:—Length 14 inches, expanse 30, wing 10, tail 5·75, tarsus 0·8, bill at front 1·6, bill at gape 2. Legs and feet black; Jerdon says coral-red and dusky reddish respectively.

122. Sterna fuliginosa, Gm.

The Sooty Tern is fairly common and breeds close by. Dr. Bartlett received two eggs from an island near Obok that were exactly like those in my collection, which were taken on an island in the Persian Gulf. A dead bird picked up on the beach had a large wound in the neck; it had evidently been struck with a stone shot from an Arab's double-string bow, with which some of that race are remarkably expert.

In July I paid a very brief visit to Berbera, where I met Captain Mereweather, who informed me that the previous month he had landed on the small island of Zaila, on the Somali coast, and found the whole ground covered with the eggs of many sorts of Gulls and Terns. At my request he sent a boat, but the men returned with the news that the birds had all hatched out.

123. PHAËTHON INDICUS, Hume*.

A Tropic-bird was seen by Mr. Gaye, of the Eastern Telegraph Company, in May; he says that the long tail-feathers were pure white. Several others have been reported to me at different times, and I have frequently gone out in the Telegraph yacht after them, but have never had the good luck to see one.

124. SULA FIBER (Linn.).

This Booby is very common in May and June. They fly very low over the water, either singly or in small parties numbering not more than six birds.

125. PELECANUS ONOCROTALUS, Linn.

This Pelican is very common, frequenting the bays near Seera Island. I have noticed them several times swimming amongst the native craft lying at anchor off Malla Pier and at other places.

They must breed not very far away, as they are seen at different times during the year. I possess an egg taken in Persia.

126. PHALACROCORAX, sp. inc.

The Brown Cormorant alluded to by Major Yerbury is very common and a specimen could be obtained at any time.

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* [*Cf.* Hume, 'Stray Feathers,' x. p. 146.—ED.]

In addition to the locality given by him, they are frequently to be seen sitting on the rocks near Seera Mole Battery. I have several times shot them, but something has always prevented me from skinning them; perhaps the knowledge that I could always get one at any time made me indifferent.

Index.

Part I.

1. Gyps fulvus, p. 63.
2. Neophron percnopterus, p. 64.
3. Falco peregrinus, p. 64.
4. Falco barbarus, p. 64.
5. Tinnunculus alaudarius, p. 65.
6. Accipiter nisus, p. 65.
7. Aquila chrysaetos, p. 65.
8. Aquila imperialis, p. 66.
9. Pandion haliaëtus, p. 66.
10. Haliaëtus leucogaster, p. 66.
11. Melierax polyzonus, p. 67.
12. Milvus ægyptius, p. 67.
13. Elanus cæruleus, p. 67.
14. Strix flammea, p. 68.
15. Carine, sp. inc., p. 68.
16. Scops giu, p. 68.
17. Hirundo rustica, p. 68.
18. Cotyle obsoleta, p. 69.
19. Cypselus, sp. inc., p. 69.
20. Caprimulgus, sp. inc., p. 69.
21. Merops cyanophrys, p. 70.
22. Merops persicus, p. 70.
23. Merops, sp. inc., p. 71.
24. Coracias garrulus, p. 71.
25. Coracias abyssinicus, p. 72.
26. Halcyon semicæruleus, p. 72.
27. Cuculus canorus, p. 72.
28. Coccystes, sp. inc., p. 73.
29. Centropus, sp. inc., p. 73.
30. Nectarinia metallica, p. 73.
31. Upupa epops, p. 73.
32. Lanius lahtora, p. 73.
33. Lanius nubicus, p. 73.
34. Lanius, sp. inc., p. 74.
35. Hypocolius ampelinus, p. 74.
36. Terpsiphone paradisi, p. 74.
37. Muscicapa grisola, p. 74.
38. Monticola cyanus, p. 74.
39. Cercotrichas melanoptera, p. 75.
40. Argya, sp. inc., p. 75.
41. Pycnonotus arsinoe, p. 75.
42. Pycnonotus xanthopygus, p. 75.
43. Oriolus galbula, p. 76.
44. Saxicola œnanthe, p. 76.
45. Saxicola stapazina, p. 76.
46. Saxicola pleschanka, p. 76.
47. Myrmecocichla melanura, p. 77.
48. Ruticilla, sp. inc., p. 78.
49. Prinia, sp. inc., p. 78.
50. Phylloscopus, sp. inc., p. 78.
51. Motacilla alba, p. 78.
52. Motacilla feldeggi, p. 79.
53. Corvus culminatus, p. 79.
54. Corvus corax, p. 80.
55. Dilophus carunculatus, p. 80.
56. Hyphantornis galbula, p. 80.
57. Estrelda rufibarba, p. 82.
58. Uroloncha, sp. inc., p. 82.
59. Passer, sp. inc., p. 83.
60. Pyrrhulauda melanauchen, p. 83.
61. Alauda cristata, p. 83.
62. Alæmon desertorum, p. 83.
63. Mirafra, sp. inc., p. 84.

PART II.

64. Treron, sp. inc., p. 165.
65. Columba livia, p. 165.
66. Turtur senegalensis, p. 165.
67. Turtur risorius, p. 165.
68. Œna capensis, p. 166.
69. Pterocles exustus, p. 166.
70. Pterocles lichtensteini, p. 166.
71. Caccabis melanocephala, p. 166.
72. Caccabis chukar, p. 166.
73. Ammoperdix bonhami, p. 167.
74. Coturnix communis, p. 167.
75. Coturnix delegorguei, p. 168.
76. Turnix lepurana, p. 168.
77. Eupodotis arabs, p. 168.
78. Houbara macqueeni, p. 168.
79. Cursorius, sp. inc., p. 168.
80. Squatarola helvetica, p. 169.
81. Charadrius pluvialis, p. 169.
82. Œdicnemus scolopax, p. 169.
83. Ægialitis mongolica, p. 169.
84. Ægialitis cantiana, p. 170.
85. Strepsilas interpres, p. 170.
86. Dromas ardeola, p. 170.
87. Hæmatopus ostralegus, p. 170.
88. Gallinago cœlestis, p. 171.
89. Terekia cinerea, p. 171.
90. Numenius arquata, p. 171.
91. Numenius phæopus, p. 171.
92. Tringa alpina, p. 171.
93. Tringa minuta, p. 171.
94. Calidris arenaria, p. 171.
95. Tringoides hypoleucus, p. 171.
96. Helodromas ochropus, p. 172.
97. Totanus calidris, p. 172.
98. Crex pratensis, p. 172.
99. Ardea cinerea, p. 173.
100. Ardea alba, p. 173.
101. Ardea, sp. inc., p. 173.
102. Ardea asha, p. 173.
103. Ardeola podiceps, p. 173.
104. Platalea leucorodia, p. 174.
105. Ibis, sp. inc., p. 174.
106. Phœnicopterus roseus, p. 174.
107. Anas boschas, p. 174.
108. Querquedula crecca, p. 174.
109. Querquedula circia, p. 174.
110. Podiceps nigricollis, p. 174.
111. Puffinus persicus, p. 175.
112. Larus, sp. inc., p. 175.
113. Larus ichthyaëtus, p. 175.
114. Larus brunneicephalus, p. 175.
115. Larus ridibundus, p. 176.
116. Larus hemprichi, p. 176.
117. Sterna albigena, p. 176.
118. Sterna minuta, p. 177.
119. Sterna bergii, p. 177.
120. Sterna media, p. 178.
121. Sterna anæstheta, p. 178.
122. Sterna fuliginosa, p. 178.
123. Phaëthon, sp. inc., p. 179.
124. Sula fiber, p. 179.
125. Pelecanus onocrotalus, p. 179.
126. Phalacrocorax, sp. inc., p. 179.

XIV.—*On the Occurrence of the Sharp-tailed Sandpiper* (Tringa acuminata) *in Norfolk.* By HENRY SEEBOHM. *With an Appendix* by THE EDITOR.

(Plate V.)

AN example of the Siberian Pectoral or Sharp-tailed Sandpiper, shot on the 29th of August, 1892, at Breydon, near

Great Yarmouth, by Mr. T. Ground, has been sent to me for examination by the Editor of 'The Ibis.'

It is an adult bird, with most of the underparts marked with dark brown spots, which are small and nearly terminal on the throat and breast, large, subterminal, and squamate on the belly and flanks, and large and lanceolate on the under tail-coverts.

The squamate markings on the belly, and especially on the flanks, are very characteristic of the adult, in summer dress, of the Siberian species, and serve to distinguish it at a glance from the adult of the American species, and from the young of both, in which the belly is unspotted white and the markings on the flanks are confined to a few obscure shaft-streaks.

I have also examined a second example which was presented to the Norfolk and Norwich Museum by the late Mr. J. H. Gurney as an American Pectoral Sandpiper with no locality, but dated September 1848. It was said to have been killed on the Denes near Yarmouth (Gurney, 'Zoologist,' 1849, p. 2392), but shortly afterwards the fact that two examples, also in the flesh, of another American bird (the Red-winged Starling) were offered to Mr. Gurney through the same source, induced him to believe that he had been imposed upon as to the locality (Gurney, 'Zoologist,' 1849, p. 2568).

Mr. Gurney's bird is also an adult Siberian Pectoral Sandpiper, and it is more probable that it was really shot near Yarmouth (as was alleged) than that it was brought from either its summer-quarters in Eastern Siberia, its winter-quarters in Australia or New Zealand, or from Japan or one of the islands of the Malay Archipelago which it passes on migration.

The Siberian Pectoral Sandpiper has never been properly figured, and in 1848 it is probable that adult birds in summer plumage were unknown. The figure of *Tringa australis* (Jardine and Selby, 'Illustrations of Ornithology,' ii. pl. 91) represents an immature bird which has not lost the wing-coverts of its first plumage, and has acquired the narrow

pectoral streaks of its first winter dress, but has not yet got any streaks on the flanks. The figures of *Schœniclus australis* (Gould, 'Birds of Australia,' vi. pl. 30) represent a young bird in first plumage with buff and almost unspotted breast, and an example, probably adult, in winter dress, with very little rufous buff on the upper parts and no streaks on the flanks. The figure of *Tringa acuminata* (Nelson, Nat. Hist. Coll. Alaska, iii. pl. vii.) appears to be that of a young bird in first plumage with more streaks than usual on the breast.

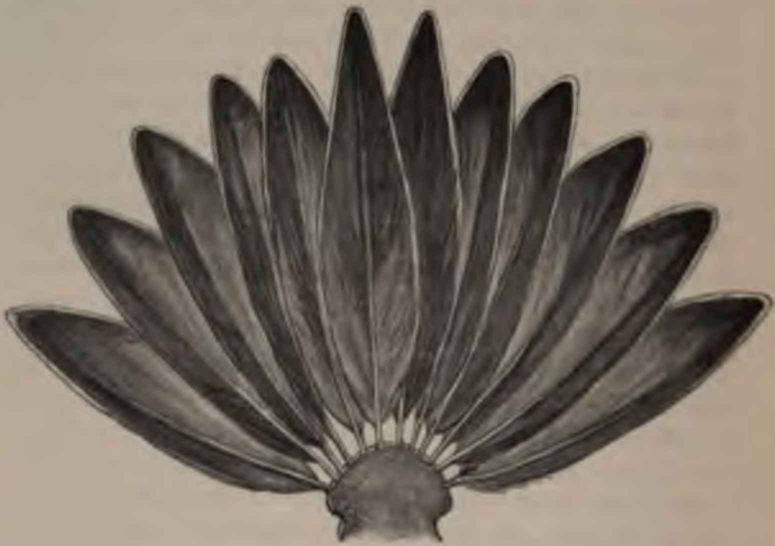
The egg of the Siberian Pectoral Sandpiper is unknown, but there can be no doubt that the bird breeds in Siberia. I have an example obtained by Dybowski on the river Argun in Dauria on the 1st of June, and several examples from the Chinese coast collected by Swinhoe in April and May. It must now be added to the list of accidental visitors to the British Islands, and it would be wise in all possessors of supposed examples of British-killed American Pectoral Sandpipers to examine them carefully, since it is extremely probable that some of them may belong to the Siberian species.

Appendix. By THE EDITOR.

To Mr. Seebohm's notes on this interesting addition to the British Avifauna I subjoin the principal references in ornithological literature to this bird, for which the best English name appears to be the "Sharp-tailed Sandpiper," adopted by Nelson.

The figure (Plate V.) is taken from Mr. Ground's specimen, which has been kindly lent to me for the purpose. Mr. Ground writes to me as follows respecting it:—

"I shot the bird on the 29th August last on Breydon mudflats; it was in company with a Ringed Plover and three or four Dunlins. The boatman picked it up and threw it into the punt, saying it was a Dunlin. On reaching home I examined the bird, and having never seen a Dunlin with so fine and short a bill, I took it to the stuffers and was agreeably surprised to find a few days afterwards that it had been pronounced to be an example of *Tringa acuminata*."



Tail of *Tringa acuminata.*
(From Seebohm's Geogr. Distr. Charadr. p. 441.)

TRINGA ACUMINATA.

Totanus acuminatus, Horsf. Trans. Linn. Soc. xiii. p. 192 (1820) (Java).

Tringa australis, Jard. & Selb. Ill. Orn. ii. pl. 91 (1829).

Schœniclus australis, Gould, B. Austr. vi. pl. 30 (1847).

Tringa acuminata, Swinh. P. Z. S. 1863, p. 316, et 1871, p. 409 (China); id. Ibis, 1863, p. 412 (Formosa), et 1875, p. 455 (N. Japan); Whitely, Ibis, 1867, p. 205 (N. Japan); Hartl. & Finsch, P. Z. S. 1868, pp. 8, 118, et 1872, p. 106 (Pelew); Tacz. Bull. Soc. Zool. France, i. p. 252 (1876) (Siberia); Blak. & Pryer, Ibis, 1878, p. 221 (Japan); Scl. P. Z. S. 1878, p. 290 (New Ireland); Meyer, Ibis, 1879, p. 143 (Celebes); Salv. Cat. Strickl. Coll. p. 610 (1882); Biddulph, Ibis, 1882, p. 287 (Gilgit); Guillemard, P. Z. S. 1885, p. 664 (Batanta); Seebohm, Geogr. Distr. Charadr. p. 441 (1887); Nelson, Rep. N. H. Coll. Alaska, p. 106, pl. vii. (1887); Tacz. P. Z. S. 1888, p. 457 (Corea); Buller, Bds. N. Zeal. ed. 2, ii. p. 37 (1888); Schleg. Mus. P.-B. *Scolopaces,* p. 38; Styan, Ibis, 1891, pp. 330, 506 (Lower

Yangtse); Southwell, Zool. 1892, pp. 356, 405; P. Z. S. 1892, p. 581.

Limnocinclus acuminatus, Gould, Handb. Bds. Austr. ii. p. 254 (1865).

Actodromas acuminatus, Stejn. Bull. U.S. N. M. no. 29, p. 115 (1885) (Bering Island).

From this list it will be evident that the Sharp-tailed Sandpiper is widely distributed over the eastern part of the Palæarctic region, and visits the North Pacific Islands and Alaska during the autumn migration. In winter it passes far south over the Sunda Islands and the Pelew Islands to New Guinea, New Ireland, Australia, the Friendly Islands, and New Zealand.

XV.—*List of Birds observed in the Canary Islands.*

By E. G. Meade-Waldo.

The following list is not intended to be a complete catalogue of the birds of the Canaries, but merely of those observed and procured during a residence of nearly four years in the islands. Specimens of almost the whole of the birds mentioned have been actually obtained, but a few of them I have seen only in the collection of Don Anatael Cabrera at Laguna, and a few others in that of Don Ramon Gomez. The species *not* yet procured, but observed and recognized beyond a doubt, are:—the Honey-Buzzard (*Pernis apivorus*); the White-tailed Eagle (*Haliaëtus albicilla*), seen on the beach close to Arecife, Lanzarote, by Canon Tristram; the small Peregrine (*Falco punicus*), which I could easily have shot, but have contented myself with carefully looking at, occasionally within a distance of a few yards; and an Eagle, seen several times above Esperanza, but not included in the list, which, almost beyond a doubt, was Bonelli's Eagle (*Nisaëtus fasciatus*).

The Spanish name, where given, is the provincial term by which the birds are known to the peasants. It is very hard to get hold of what is really their name for a bird, as many of them do not know any names except those of the birds always before them. "*Pajaro de monte*" usually covers all birds of the high forest or scrub, and "*Pajaro de Africa*" all visitors. The Gold-crest, which is exceedingly abundant, appears to have no name except "*Pajaro pequeño*"! which it certainly is. Everybody distinguishes all the birds of prey, except the Peregrine, which, on my pointing one out one day to the man who was with me, sitting on a rock looking at us about twenty yards off, he informed me was a kind of *Coruja* (Owl). The Sparrow-Hawk is always called "*Halcón*," not "*Gavilan*."

Of the Ducks and Waders, doubtless many that have not been included occasionally wander to the Canary Islands, for in the spring of 1890 numbers of birds which no one seemed to recognize appeared. And the islands of Montaña Clara, Alegranza, and other small islands and rocks would well repay a visit in the months of June and July, on account of the numerous Petrels that breed there.

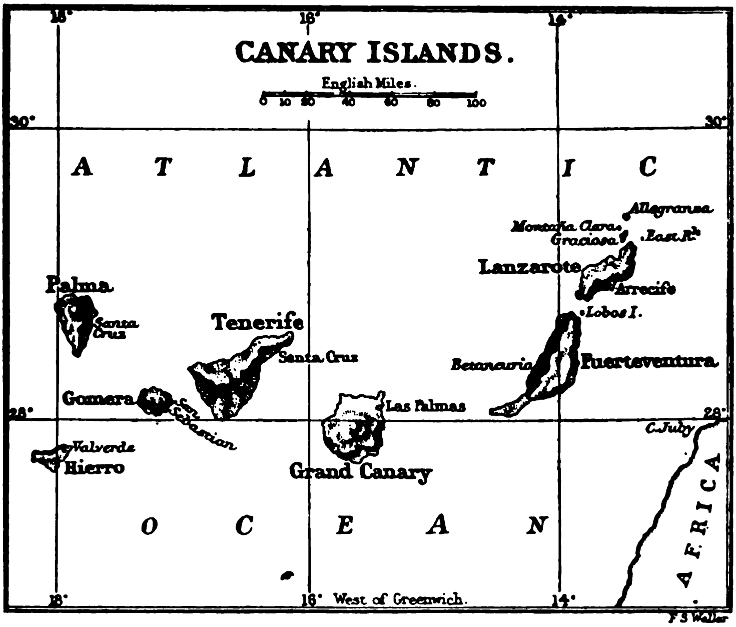
An Owl (*Glaucidium siju*), which has been included in the list of Canarian birds, as I happen to know, was not procured at Adeje, Tenerife, as stated. Don Ramon Gomez showed the specimen to Canon Tristram and myself, and on our expressing doubts as to its occurrence there, told us it had come from Cuba. It has been included in Dr. König's list, but Don Ramon tells me it is his intention to undeceive the author[*].

I have mentioned the number of eggs laid by some of the species, because they appear to be so very few compared with what are laid by the same birds in the British Isles. Moreover, *white* clutches are by no means uncommon, and several species lay most curious varieties, none of them, perhaps, more remarkable than those of the Blackcap (*Sylvia atricapilla*), which not unfrequently lays clutches of white eggs, spotted at the larger end with purplish and pale violet. The Kestrel lays eggs of every possible variety of colouring, white being not rare; while the Raven (*Corvus tingitanus*) is almost as erratic in the colouring of its eggs.

All the islands of the Canary group have been visited, and,

[*] [*Cf.* remarks, Ibis, 1891, p. 616.—Ed.]

with the exception of Hierro, several times. Of the smaller outlying uninhabited rocks, I went only to Graciosa, and I was there too early for the Petrels, which come in great numbers in the middle of May.



1. Turdus musicus. Song-Thrush. (*Tordo.*)

The Song-Thrush is an abundant winter visitor to the high ground. I do not remember to have seen it lower than about 1800 feet. A few remain until April.

2. Turdus pilaris. Fieldfare.

The Fieldfare is, apparently, an accidental straggler, as we saw only one while we were in the Canaries.

3. Turdus merula. Blackbird. (*Mirlo.*)

The Blackbird is an abundant resident, breeding from the gardens at the sea-level to as high as any scrub grows. Like many Canarian species, it lays very few eggs, two or three being the usual clutch, and very frequently only one is laid. Occasionally there seems to be a large influx of migrants, consisting principally of males.

4. Saxicola œnanthe. Wheatear.

This is a scarce and irregular visitor to the Laguna plains in Tenerife.

5. Pratincola dacotiæ, Meade-Waldo, Ibis, 1889, p. 504, pl. xv. Canarian Chat.

Whether or not this Chat deserves the name of Canarian remains yet to be proved, as it probably also inhabits the province of Sus, adjoining the island of Fuerteventura, where we first saw it, and in the Canarian Archipelago this seems to be its sole habitat. It does not occur, so far as we could see, in Lanzarote, separated by only a narrow strait; in fact, we never saw it except in the southern part of Fuerteventura. It was not rare, and seemed generally distributed wherever there was a little cover, especially frequenting the small barrancos on the low hills. Two nests, placed under stones, contained two young apiece, and a pair of old birds were accompanied by two young ones. Two other nests contained three eggs each. It was a very tame little bird, and its alarm-note was much louder and sharper than that of our Stonechat.

6. Ruticilla phœnicurus. Redstart.

A few Redstarts touch at the islands in spring and autumn.

7. Ruticilla titys. Black Redstart.

The Black Redstart is rather more frequent than the last.

8. Cyanecula wolfi. White-spotted Bluethroat.

I have seen but two specimens of this species that were shot at Laguna.

9. Erithacus superbus, König, J. f. O. 1889, p. 183. Tenerifian Redbreast. (*San Antonio.*)

The Redbreast with brilliant red throat and white underparts is exceedingly abundant in the island of Tenerife, and also in suitable places in Grand Canary, frequenting always the high ground. The number of eggs laid is two or three, occasionally four, and the nest is not unfrequently placed up in the branches of a tree. I have never seen a typical *Erithacus rubecula* in Tenerife, or a Tenerifian Redbreast in any other island except Tenerife and Grand Canary. At the same time plenty of Redbreasts from Europe are almost or quite as bright as the Tenerife bird, although *E. superbus* has a different look about it.

10. Erithacus rubecula. Redbreast.

The Common Redbreast is abundant in the islands of Gomera, Palma, and Hierro.

11. Sylvia conspicillata. Spectacled Warbler. (*Ratonero.*)

Abundant everywhere from the coast up to 3500 feet, getting scarcer the higher it goes. In summer some are found up to 6000 feet. It frequents also the hottest plains by the sea on the south side of the island, where nothing but cactus and euphorbia grows.

12. Sylvia melanocephala. Black-headed Warbler. (*Capirote colorado.*)

Another abundant resident, but scarce near the coast. It frequents all the thick scrub up to the highest tops. In Fuerteventura it is common in the tamarisk valleys.

13. Sylvia atricapilla. Blackcap. (*Capirote.*)

This is an abundant resident, except in Lanzarote and Fuerteventura. Large numbers of migrants also arrive in the autumn. It does not ascend very high up the mountain as a rule, but I have on two or three occasions seen large numbers of hens in the laurel-forests. *Sylvia heinekeni,* the black-throated variety, in the Canaries, appears to be confined to the island of Palma.

14. Regulus teneriffæ, Seebohm, Brit. Birds, i. p. 459. Canarian Gold-crest.

The Canarian form of the Gold-crest is abundant in all the western islands, frequenting the high ground, tree-heath, and pine- and laurel-woods. It lays from three to five eggs, indistinguishable from those of *R. cristatus*.

15. **Phylloscopus rufus.** Chiffchaff. (*Hornero.*)

The Chiffchaff is common everywhere at all elevations, except in Fuerteventura and Lanzarote. Its voice and habits differ much from those of our bird. It lays from three to five eggs.

16. **Phylloscopus sibilatrix.** Wood-Warbler.

I have seen but one example of the Wood-Warbler in the Canaries.

17. **Parus ultramarinus.** Ultramarine Tit. (*Frailero.*)

In suitable places in Fuerteventura and Lanzarote; in the latter island we saw it only in the neighbourhood of Haria. The Canarian form is rather paler in colour and smaller in size than Moroccan and Algerian examples.

18. **Parus teneriffæ.** Tenerife Blue Tit. (*Frailero.*)

Is common throughout the islands of Tenerife, Gomera, and Gran Canaria. It lays from three to five eggs.

19. **Parus palmensis,** Meade-Waldo, Ann. & Mag. N. H. ser. 6, iii. p. 490. Palman Blue Tit. (*Fula.*)

Common in the pine-forests of La Palma, a very few coming into the laurel-woods. It appears never to approach houses or towns, and breeds fully a month earlier than *P. teneriffæ*. It lays from three to five eggs.

20. **Parus ombriosus,** Meade-Waldo, Ann. & Mag. N. H. ser. 6, v. p. 103. Hierran Blue Tit.

The Green-backed Blue Tit of Hierro is common in the pines of that island, a few passing into the tree-heath district.

21. **Motacilla alba.** White Wagtail. (*Pispa.*)

A not uncommon winter visitor. In the winter of 1890–91 it was exceedingly numerous.

22. **Motacilla melanope.** Grey Wagtail. (*Pispa, Lavandera.*)

This most familiar and charming bird is common everywhere, frequenting the towns and coming freely into the houses. A pair bred every year on the top of our hall-door in Tenerife, rearing annually two or three broods. It lays three to six eggs, not unfrequently a clutch of pure white ones, and occasionally some of a bright brick-red colour. It is rather larger and has a longer tail than our English bird.

23. ANTHUS TRIVIALIS. Tree-Pipit.

A very rare straggler. I have seen but two of them.

24. ANTHUS CAMPESTRIS. Tawny Pipit.

I have seen this Pipit only in Fuerteventura, where it was common in spring.

25. ANTHUS BERTHELOTI. Berthelot's Pipit. (*Caminero* or *Corre-camino.*)

Abundant in all the islands from the coast to the highest cumbres. It is least abundant in the island of La Palma. I have never seen the least variation in the colour of its eggs.

26. ORIOLUS GALBULA. Golden Oriole. (*Oropendola.*)

The Golden Oriole is an irregular but occasionally numerous spring visitor.

27. LANIUS ALGERIENSIS. Algerian Grey Shrike. (*Alcairon.*)

This Shrike is found in all the Canary Islands, and is exceedingly numerous in the eastern group. It is strange that specimens from the eastern islands should differ from the mainland form more than those of the western islands do. The Shrikes of Fuerteventura and Graciosa are far paler on the underparts than Moroccan specimens. In the western islands they are darker, but still not so dark as the majority of examples of *L. algeriensis* from the mainland. In Tenerife this Shrike is abundant on the south side of the island, and is fairly plentiful on the cumbres and in the cañadas, at 7000 feet, but very rarely comes down the northern slopes. The Shrikes from the high ground are darker in colour than those on the coast. In Fuerteventura an isabelline variety occurs, and I took a young sandy-coloured bird from a nest, with a pure white-breasted cock and a sandy hen for its parents. The young one brought to England moulted out into a dark grey. The eggs are from four to six, and vary very slightly in colour.

28. Lanius pomeranus. Woodchat.
I have seen but one specimen of this Shrike.

29. Muscicapa grisola. Spotted Flycatcher.
An occasional straggler.

30. Muscicapa atricapilla. Pied Flycatcher.
Like the last, occasionally met with.

31. Hirundo rustica. Swallow. (*Golondrina.*)
A spring and autumn visitor, occasionally in large numbers only remaining a day or so, as a rule.

32. Chelidon urbica. Martin.
As the Chimney Swallow, but more irregular.

33. Cotile riparia. Sand-Martin.
I have only seen a few, in 1890–91.

34. Carduelis elegans. Goldfinch. (*Pajaro pintado.*)
The Goldfinch is found in all the islands, but is most common in Grand Canary, on the south side of Tenerife, and in the neighbourhood of Los Llanos, in La Palma. It is rarer and more local in the eastern islands.

35. Serinus canarius. Canary. (*Pajaro canario.*)
The Canary is very common in all the islands except in Fuerteventura and Lanzarote. In La Palma it is wonderfully abundant, and may be seen in great flocks throughout the breeding-season, as if there was not room for all to pair and breed. In Tenerife it commences breeding near the coast in January; while in the high mountains it breeds in June and July. It occasionally lays clutches of pure white eggs.

36. Passer salicicola. Spanish Sparrow. (*Palmero.*)
The Spanish Sparrow is common in Gran Canaria, Fuerteventura, and Lanzarote, but though it has been introduced into Tenerife, it fortunately has not established itself there.

37. Petronia stulta. Yellow-throated Rock-Sparrow. (*Triqueno.*)

Common and resident in all the islands except Fuerteventura and Lanzarote.

38. Fringilla canariensis. Tintillon Chaffinch. (*Chinchillon, Chuve.*)

This Chaffinch is fairly abundant in all suitable places in Tenerife, Gran Canaria, and Gomera. In winter it occasionally comes down to the gardens at sea-level, but does not breed lower than about 2000 feet. It lays two or three eggs, occasionally four. The earliest clutch I ever took was on May 16th. It not unfrequently lays white eggs.

39. Fringilla palmæ, Tristram, Ann. & Mag. N. H. ser. 6, iii. p. 489. Palman Chaffinch. (*Pajaro de monte.*)

The Palman Chaffinch is very common in the island of Palma, and ranges right through the pine-forests. Its song and call-notes are quite different from those of *F. canariensis.* In Hierro an intermediate form between this and *F. canariensis* occurs.

40. Fringilla teydea. Teydean Chaffinch. (*Pajaro azul.*)

This beautiful Chaffinch, I am glad to say, appears to hold its own in all the pine-forests of Tenerife, and in one district seems to increase, owing, I believe, to a war waged against all the Sparrow-Hawks that breed there and that evidently feed on the poor "*Azules.*" They are the tamest birds imaginable; when we were camped in the pine-forest they would freely come into our tent to feed, and would anxiously wait for us to liberate from our fingers a butterfly that had been captured. Though feeding on the pine-seed, they do equally well without it in confinement, but appear to want a great deal of insect food. They seem perfectly hardy, a fine old cock in our aviary having been out all through the winters of 1891 and 1892. The nest is built at the end of June, and two eggs only are laid.

41. Linota cannabina. Linnet. (*Millero.*)

The Linnet is abundant in all the islands, and except in the island of Fuerteventura, where it is rare to get an example with any red at all on the breast, is usually very rich in colour.

42. Erythrospiza githaginea. Trumpeter Bullfinch. (*Alburion, Pispo.*)

This familiar little bird is very abundant in Fuerteventura and Lanzarote, and in suitable parts of Gran Canaria.

43. Emberiza miliaria. Corn-Bunting. *Pajaro Pollo, Triquero.*)

Abundant in all the islands.

44. Alauda arvensis. Sky-Lark. (*Alondra.*)

A regular winter visitor in small numbers to the Laguna plains and other suitable places.

45. Calandrella minor. Lesser Short-toed Lark. (*Calandria.*)

A most abundant species in all the eastern islands. A summer visitor to the Laguna plains.

46. Melanocorypha calandra.

I have only seen one specimen, that had been shot at Laguna.

47. Sturnus vulgaris. Starling. (*Estornino.*)

A regular winter visitor, but in no great numbers, to all the islands.

48. Pyrrhocorax graculus. Red-billed Chough. (*Grajo.*)

Confined to the island of Palma, where it abounds.

49. Corvus tingitanus. Morocco Raven. (*Cuerro.*)

This Raven is abundant in all the islands, especially in the island of Hierro. Their eggs vary most remarkably in colour.

50. Cypselus unicolor. Madeiran Black Swift. (*Andoriña.*)

This little Swift is extremely abundant all the year, except from about October 10th to the beginning of January, but occasional birds turn up when the main body is absent.

51. Cypselus pallidus. Pallid Swift. (*Andoriña.*)

Arrives in early spring, and is found in all the islands, but is most common in the eastern group and near the coast.

52. Cypselus melba. White-bellied Swift.

I have only known of one example of this Swift, which was killed near Santa Cruz, Tenerife.

53. Picus major. Great Spotted Woodpecker. (*Peto, Carpintero.*)

This Woodpecker appears to be confined to the pine-forests of Tenerife and Gran Canaria. In La Palma, where there are splendid pine-woods, we could hear nothing of it, and we saw no work in the old trees. Still it seems hardly possible for it not to have found its way there. The majority of examples of this species from the Canaries have the breast-feathers very brown in colour. This colouring is *not* taken from the trees, as the young feathers sprout up of the same colour. An occasional specimen only has the breast nearly white.

54. Coracias garrula. Roller.

An occasional visitor.

55. Merops apiaster. Bee-eater. (*Abejaruco.*)

An irregular but occasionally numerous spring-migrant, especially to the eastern islands.

56. Upupa epops. Hoopoe. (*Tabobo.*)

Common in all the islands, but especially numerous in the eastern group. In Lanzarote and Fuerteventura every village is full of them, and they extend right into the desert if there are convenient nesting-holes among the rocks. They are to a great extent migratory, though many spend the winter in these islands, in some years more numerously than in others.

57. Cuculus canorus. Cuckoo. (*Cucu.*)

The Cuckoo is an irregular spring visitor; in the spring of 1890 many came for a few days. All the birds were very small and dark in colour.

58. **Strix flammea.** Barn-Owl. (*Lechuza.*)

The Barn-Owl is resident, but not abundant; it is commonest in the neighbourhood of Laguna, Tenerife. I have never seen more than two eggs in a nest.

59. **Asio otus.** Long-eared Owl. (*Coruja.*)

This is the common Owl of the islands, and is generally distributed, living in caves, in the thickly-wooded sides of the barrancos, in the evergreens and palm-trees, in the towns, and in the *Euphorbia canariensis* on the most arid lava-flows.

60. **Asio brachyotus.** Short-eared Owl.

An occasional winter visitor. I have seen only two examples.

61. **Neophron percnopterus.** Egyptian Vulture. (*Guirre.*)

This is the only Vulture we saw in the Canaries; it is common in all the islands except La Palma and Hierro, where we could not see or hear of it. It appears to be most abundant in the eastern islands, and is especially numerous in the neighbourhood of Las Palmas, Gran Canaria. In Fuerteventura it sometimes places its nest in very accessible places.

62. **Buteo vulgaris.** Buzzard. (*Aguililla*).

Common and resident in all the islands. Many migrants occasionally arrive. In the autumn of 1890 I saw fifteen together, sitting on a wall, and so tame that they let me walk along and examine them at a distance of not more than fifteen yards. I shot one that had an almost pure white breast; it was a young bird, and had nothing either in the crop or stomach. Although it almost invariably builds in a cliff or on the steep side of a barranco, we once found a nest in a laurel tree close to the town of Icod. Strange to say, we never saw *Buteo desertorum*.

63. **Pernis apivorus.** Honey-Buzzard.

An accidental visitor; I have seen only two.

64. Haliaëtus albicilla. White-tailed Eagle.

I have never met with this bird, but Canon Tristram saw one in Lanzarote.

65. Accipiter nisus. Sparrow-Hawk. (*Halcón.*)

Common and resident; many also arrive in the autumn. It is most numerous in the mountains. We once found its nest in a low bush of tree-heath, not more than a yard from the ground. It sometimes breeds in laurels, but much more frequently in pines. It is probably only a visitor in Fuerteventura and Lanzarote.

66. Milvus ictinus. Kite. (*Milano.*)

The Red Kite is common and resident in all the western islands, except La Palma, where we could neither see it nor hear of it. It is extremely bold about the towns, but wary enough in the country. The poor peasants who live in the mountains have a great dread of the Kites, which take the chickens almost out of the houses, but they care little for the Buzzards.

67. Falco punicus. Small Peregrine Falcon. (*Halcón real.*)

I have no doubt now that the Falcon which occurs in the Canaries is referable to this species. I do not think they breed in Tenerife, as we could never see or hear of a nest, but they are occasionally seen at all seasons of the year. Canon Tristram, however, saw a pair that appeared to contemplate nesting in Gran Canaria.

68. Falco vespertinus. Red-footed Falcon.

During the spring migration of 1890 a good many examples of *F. vespertinus* visited the valley of Orotava.

69. Tinnunculus alaudarius. Kestrel. (*Cernicalo.*)

The Kestrel abounds in all the islands, and, except in Fuerteventura, the female is always very dark in colour and very strongly marked, having the tail blue, with narrow black bars after the first moult; the males are rather light and pure in colour. The Fuerteventura Kestrel is *much* smaller and lighter in colour, the females being *very* pale. In Lanzarote, close by, the dark form again occurs, although the islands have almost similar features.

70. Pandion haliaëtus. Osprey. (*Gincho.*)

The Osprey inhabits all the islands, especially those of the eastern group and the rocks and islets surrounding them. They appear to be most abundant in the summer. I have seen them take gold-fish out of a tank. When on the point of Fuerteventura known as Iandía, we were surprised to see the Ospreys waiting about with the Gulls for small fishes and scraps thrown away by a party of fishermen who were camped on the beach salting fish.

71. Sula bassana. Gannet.

The Gannet is occasionally abundant round the islands, especially between Fuerteventura and Cape Juby.

72. Ardea cinerea. Heron. (*Garza.*)

The Heron frequents all the coasts and tanks, especially in winter. I do not think that they breed in the Canaries, but am not sure. Although many spend the summer there, I never saw one in breeding-plumage.

73. Ardea purpurea. Purple Heron. (*Garza real.*)

I have seen only one specimen of the Purple Heron, which had been shot at Laguna.

74. Ardea bubulcus. Buff-backed Heron.

An occasional straggler.

75. Ardea ralloides. Squacco Heron.

Somewhat more frequent than the last.

76. Nycticorax griseus. Night-Heron.

I have only seen one; it had been shot at Laguna.

77. Ardetta sturmi (Wagl.). Sturm's Bittern.

I have seen an example of this bird, which had been shot at Laguna.

78. Ardetta minuta. Little Bittern.

A Little Bittern was caught alive in Puerto Orotava in 1890. I have kept it in confinement ever since.

79. Botaurus stellaris. Bittern.

The Bittern occasionally occurs at Laguna. I have seen one and heard of another.

80. Ciconia alba. White Stork. (*Cigüena.*)

Sixteen White Storks frequented the plains of Laguna in the winter of 1890–91. Four of them were shot by a wretched boy at one discharge of his gun; no others were killed.

81. Platalea leucorodia. Spoonbill. (*Cuchareta.*)

The Spoonbill has been killed in Tenerife and visits the shores of Fuerteventura in small flocks, especially the coast by Toston.

82. Phœnicopterus roseus. Flamingo. (*Flamenco.*)

The remains of a dead Flamingo were all I saw, but it seems well known to the fishermen on the eastern islands. They also described to me a larger grey bird as occasionally appearing, which was doubtless the Common Crane (*Grus cinerea*).

83. Anas boschas. Wild Duck. (*Pato real.*)

In wet seasons a good many Wild Ducks visit the Laguna plains, and a few also come to the tanks in the valleys. In the winter of 1890–91 many were killed.

84. Spatula clypeata. Shoveller. (*Pato.*)

I have seen only one, which I shot in a tank by our house.

85. Querquedula crecca. Common Teal. (*Pato.*)

The Teal is not very uncommon in wet winters, but does not come in large flocks, like the Ducks.

86. Fuligula ferina. Pochard. (*Pato.*)

A small flock of Pochards frequented the tanks by the Botanical Gardens in 1889.

87. Mareca penelope. Wigeon. (*Pato.*)

I have seen but one Wigeon.

88. Columba livia. Rock-Dove. (*Paloma salvaje.*)

The Rock-Dove is abundant throughout the islands, and is not confined to the coast, but inhabits suitable cliffs inland. In Fuerteventura there is a deep cave, running almost straight down in a level plain, which is the home of many hundreds. The natives occasionally draw a net over the opening at night and catch large quantities.

89. Columba bollei. Bolle's Pigeon. (*Paloma Turqueza*, or *Turcón*, La Palma.)

This laurel-loving Pigeon inhabits all the suitable grounds in the islands of Tenerife, Gomera, La Palma, and Gran Canaria, in which island, however, Canon Tristram reports it to be very scarce, owing to the almost complete destruction of the old laurel-forests. In Tenerife, ever since we went there in 1887, it has become very rare in the neighbourhood of Orotava and Santa Ursula. In La Palma and Gomera it appeared to be fairly abundant. It lays but one egg, and breeds all the year round, but principally in winter and early spring.

90. Columba laurivora. Canarian Pigeon. (*Rabi blanco*, *Rovalro*, *Rabichi*, or *Raril*.)

This Pigeon inhabits the steep slopes and deep barrancos, with sides and ledges covered with laurel-scrub, in the islands of Gomera and La Palma. In La Palma it feeds largely on the fruit of the til-tree (*Oreodaphne fœtens*). In Gomera a few used occasionally to drop out of the almost inaccessible slopes they lived in into the barley- and flax-fields at the foot of the mountain to feed. I noticed that in 1888 a great deal of the fruit of the viñatigo and laurel was blighted, so probably that was the reason. The peasants said they had never seen them do it before. In La Palma they come into the cherry-trees to eat the fruit. The Canarian Pigeon does not appear to breed before May, and nests throughout the summer; it lays but one egg on a stump or a ledge, in the most impossible places to get at.

91. Turtur communis. Turtle Dove. (*Tortola*.)

A common summer visitor to many parts of all the islands, but somewhat local; a few spend the winter in the eastern islands.

92. Caccabis rufa. Red-legged Partridge. (*Perdiz.*)
This Partridge is found only in the island of Gran Canaria, where it is fairly abundant from the highest cumbres to the coast.

93. Caccabis petrosa. Barbary Partridge. (*Perdiz.*)
This species is found in Tenerife, Gomera, and Lanzarote. In Lanzarote it is confined to one particular lava-flow, which seems strange, as many other parts seem suitable to its habits. In Gomera it abounds everywhere, and, considering the treatment it receives in Tenerife at all seasons, holds its own wonderfully. It is found in all localities except on the plains at Laguna, a large corn-growing tract, but favours the barrancos and rough volcanic ground known as "Mal pais." In La Palma, although it has repeatedly been introduced, for some unknown reason it will not establish itself.

94. Coturnix communis. Quail. (*Codorniz.*)
A most abundant resident in all the islands, and numbers of migrants arrive in the very early spring. There does not appear to be any migration away from the islands, at any rate those of the western group. They rear two or three bevies in the year. When caught, this Quail becomes perfectly tame at once, thus differing widely from those which are obtained in England.

95. Pterocles arenarius. Black-breasted Sand-Grouse. (*Ganga.*)
This is a very common resident in Fuerteventura, but much less so in Lanzarote. It occasionally comes to Gran Canaria.

96. Porzana maruetta. Spotted Crake.
A not very unfrequent winter visitor.

97. Porzana bailloni. Baillon's Crake.
This Crake occurs during most winters at Laguna.

98. Porzana parva. Little Crake.
Of this species I have seen two examples at Laguna.

99. **Crex pratensis.** Land-Rail. (*Guion de Codorniz.*)

A few Land-Rails appear in the autumn and spring. They are most frequent at Laguna.

100. **Gallinula chloropus.** Waterhen. (*Polla de agua.*)

An occasional straggler.

101. **Fulica atra.** Common Coot.

A regular winter visitor in small numbers to all the islands. I have seen several walking about on the roofs of the houses in Puerto Orotava.

102. **Otis undulata.** Houbara Bustard. (*Abutarda.*)

Resident and fairly numerous on the island of Fuerteventura; less numerous in Lanzarote, and very occasional in Gran Canaria. This Bustard does not frequent the most barren plains, but likes a certain amount of low scrub, especially the "ajulaga." This is generally crowded with small snails, which the Bustards eat largely. They are generally rather shy, but at times ridiculously tame and stupid, for on one occasion a Bustard that had for some time been trotting along about 150 yards ahead of us suddenly sidled round, and, putting a little "ajulaga" bush between us and itself, squatted. When we came up it moved very slowly round, keeping its head towards us and the bush between us. After looking the bird over at the distance of five yards, we drove it up, but did not shoot it. The female is very tame at the nest, and runs away stooping and dodging. If put on the wing the cock generally follows her, and when they settle again will "show off" to her.

103. **Œdicnemus crepitans.** Thick-knee. (*Alcaravan, Pedro Luis.*)

Common in suitable situations in all the islands, and very abundant in the eastern islands. This bird is extremely tame, frequenting and breeding in the little cultivated patches and gardens in the villages as well as on the plains.

104. **Glareola pratincola.** Common Pratincole.

I have seen only three of these birds.

105. CURSORIUS GALLICUS. Cream-coloured Courser. (*Engaño muchachos.*)

The Courser is common and resident in Fuerteventura and Lanzarote, and occasionally met with in Gran Canaria. About 1000 eggs of this poor bird were taken in the spring of 1891 in the island of Fuerteventura and sent to Europe, by far the greater number to England. Of course nearly double the number were destroyed, as the eggs that were incubated would all be thrown away. It is sincerely to be hoped that the market has now been glutted, and that the eggs will have so fallen in value as not to be worth taking again. At the price of two and even three pesetas apiece, that was offered for them out there, nearly the whole population (including, I have been assured, some of the priests) turned out egging, and probably pretty well cleared the whole of the nests for that season. It is possible there may have been an extra number of birds in 1891, but in the three breeding-seasons that I spent in the island, though there were numbers of birds, not nearly all were breeding. Possibly after the very wet winter of 1890–91 there was a greater abundance of food, and so a larger number of pairs nested. It is not always the birds of the previous year that do not breed, as a cock of a breeding-pair that was shot was in half-immature plumage.

106. SQUATAROLA HELVETICA. Grey Plover. (*Zarapito.*)

A regular winter visitor. Many winter in the eastern islands.

107. ÆGIALITIS CANTIANA. Kentish Plover. (*Patito.*)

Abundant and resident in the eastern islands, and breeding in suitable places in all the islands.

108. ÆGIALITIS HIATICULA. Ringed Plover. (*Patito.*)

A regular visitor in spring and autumn to all the islands.

109. EUDROMIAS MORINELLUS. Dotterel.

An occasional visitor in flocks to the Laguna plains.

110. VANELLUS CRISTATUS. Lapwing. (*Ave fria.*)

A regular winter visitor, occasionally in large flocks. I have seen it myself only in Tenerife and Fuerteventura.

111. **Strepsilas interpres.** Turnstone. (*Zarapito.*)

A regular visitor to all the islands, and very common in the eastern group. Many spend the summer there, and though I have seen them in pairs in June, I could not see that they were nesting. The peasants assured me that they did nest.

112. **Hæmatopus capensis**, Licht. Black Oyster-catcher. (*Corvino, Grajo de mar, Cuervo marino.*)

Not numerous, but resident in the eastern islands and rocks. It breeds very late. It appears to be always in pairs and is very tame. Its voice is much louder and stronger than that of the Common Oyster-catcher.

113. **Himantopus candidus.** Black-winged Stilt.

I have only heard of one from Fuerteventura, but I had a picture of it sent to me.

114. **Scolopax rusticula.** Woodcock. (*Gallinuela* or *Chocha Perdiz.*)

Resident in all the laurel and evergreen forests. Owing to the density of the woods, Woodcocks are very hard to see when flushed, but in the evenings many may be observed on wing. In the island of Gomera they are particularly numerous. In La Palma, where, however, they are well known by the name of "*Chocha Perdiz,*" I saw very few, but I was not out in the forests in the dusk. They have a habit here in the spring of collecting on certain grassy plots in the mountains to strut about and show off. Many are shot at this time. They seem to be breeding from February to July, as I have had fresh eggs in both months. It is hard to say to what extent they are migratory, but we never saw the slightest evidence of an arrival of Woodcocks.

115. **Gallinago cœlestis.** Common Snipe. (*Gachona.*)

A regular winter visitor, but in irregular numbers. It is sometimes very numerous about Laguna.

116. **Tringa alpina.** Dunlin.

Occasionally numerous on migration, but rarer in the eastern islands.

117. Tringa minuta. Little Stint.

Occasionally met with on migration.

118. Tringa subarquata. Curlew Sandpiper.

Occasional. In May 1891 many of these birds arrived in beautiful full breeding-plumage.

119. Machetes pugnax. Ruff.

Not numerous, but pretty regular. When there has been a heavy fall of rain the Ruff is occasionally seen in some numbers on the Laguna plains.

120. Calidris arenaria. Sanderling.

We saw Sanderlings in large flocks in the eastern islands, and on migration everywhere.

121. Tringoides hypoleucus. Common Sandpiper.

There are some of these Sandpipers about all the year round; a few probably breed.

122. Totanus ochropus. Green Sandpiper.

I have seen very few.

123. Totanus glareola. Wood-Sandpiper.

This species appears to be more frequent than the last.

124. Totanus calidris. Redshank.

Occasionally met with.

125. Totanus canescens. Greenshank.

A more regular visitor than the last three.

126. Limosa lapponica. Bar-tailed Godwit.

I have seen but one of this species.

127. Limosa ægocephala. Black-tailed Godwit.

Occasionally seen in flocks at Laguna.

128. Numenius arquata. Curlew. (*Zarapito.*)

The Curlew is occasional in the western, but pretty common in the eastern islands.

129. Numenius phæopus. Whimbrel. (*Zarapito.*)

A regular and numerous visitor, especially so in the eastern islands. A few may be seen all the year round. Many arrive in August, and they may be seen in pairs at the beginning of June.

130. Sterna hirundo. Common Tern. (*Garajáo.*)
A summer visitor to all the islands. In Tenerife they lay their eggs on the tops of high isolated rocks. They winter in the eastern islands.

131. Sterna cantiaca. Sandwich Tern.
Seen in flocks off Fuerteventura.

132. Larus cachinnans. Mediterranean Herring-Gull. (*Gaviota.*)
This is the common resident Gull. It breeds in all the islands. We never saw the true *Larus argentatus*.

133. Larus fuscus. Lesser Black-backed Gull.
There are generally a few of these Gulls about in winter.

134. Larus marinus. Great Black-backed Gull.
Much scarcer than the last.

135. Larus canus. Common Gull.
Uncommon here. I have seen but two of this species.

136. Rissa tridactyla. Kittiwake Gull.
I have seen very few of these Gulls.

137. Procellaria pelagica. Storm-Petrel. (*Perrito.*)
This Petrel is always to be seen about the islands, but I have not found it breeding.

138. Procellaria leucorrhoa. Leach's Petrel.
Occasional in winter; at least I have not seen them at any other season.

139. Oceanites oceanicus. Wilson's Petrel.
I have seen this Petrel occasionally at all seasons, but do not think they nest here.

140. Puffinus anglorum. Manx Shearwater. (*Pardela.*)
This species is sometimes common on the water in winter. It does not seem to come to land.

141. Puffinus kuhli. Mediterranean Shearwater. (*Pardela.*)

Extremely numerous and resident on all the Canary Islands. I have seen flocks of many thousands on the water between Gran Canaria and Fuerteventura.

142. Puffinus obscurus. Dusky Shearwater. (*Tahoce.*)

Resident, but not in great numbers. It breeds very early in the year.

143. Bulweria columbina. Bulwer's Petrel. (*Tahoce negro.*)

Fairly common. It breeds on all the islands, usually under big loose stones at the foot of the cliffs.

144. Pelagodroma marina. White-breasted Storm Petrel.

Not common. Some of these Petrels are caught by the fishermen every spring. They come to the torch which is used for night-fishing.

145. Alca torda. Razorbill.

A quite accidental visitor. I have known of but two.

146. Fratercula arctica. Puffin.

I have seen but one young Puffin. It was obtained at Orotava.

XVI.—*On a remarkable new Finch from the Highlands of Bolivia.* By Hans, Graf von Berlepsch.

(Plate VI.)

I propose to characterize a new form of the family Fringillidæ, from Bolivia, as

Compsospiza, gen. nov.

Rostro pro mole parvo (poospizino), fere recto, maxilla leviter incurva, apice obtusa, tomiis convexis; narium aperturis oblongis, expositis, harum parte superiore membranâ partim obtectis: pedibus fortibus, tarsis antice scutellis 7 prominentibus obtectis, postice lævibus; unguibus fortibus: remigibus rectricibusque latis et longis, illorum 3°, 4°, et 5° longissimis et ferè æqualibus; caudâ modicè graduatâ: coloribus insolitis.

Obs. Generi *Poospizopsis* nuncupando (typ. *P. cæsar*) affinis, sed rostri exigui forma, necnon coloribus, differt.

COMPSOSPIZA GARLEPPI, sp. nov. (Plate VI.)

Pileo anteriore et tænia utrinque superciliari brevi et lata ad occipitis latera ducta, striaque altera lata suboculari ab angulo oris incipiente, necnon corpore inferiore toto pulchrè et saturatè aurantio-rufis, abdomine medio pallidiore, rufescenti-fulvo: corpore superiore reliquo, capitis collique lateribus, loris, necnon alis caudaque extus griseo-plumbeis: remigibus rectricibusque intus nigrescentibus, rectricibus tribus utrinque externis ad apices angustè albo marginatis: tectricibus subcaudalibus pectori concoloribus; subalaribus et margine alarum plumbeis rufo maculatis: rostro corneo-nigro; mandibula subtus medialiter albescente; pedibus pallidè corneis.

Long. tot. 173, al. 92, caud. 89, culm. 12½, tars. 26 mm.

Habitat. Vacas, Bolivia alta (ad alt. 12,000 ped.).

Of this species I have only one specimen, in fine plumage, but without indication of sex, obtained by Mr. Gustav Garlepp in the vicinity of Vacas on the 1st September, 1890. The iris is noted as "brown."

When I first received this bird I was much perplexed regarding its systematic position. I am now of opinion that it belongs to a new genus which ought to be placed next to *Poospiza*. Its nearest ally is apparently *Poospiza cæsar*, Scl. & Salv., from Southern Peru, which in my opinion ought also to be separated generically from *Poospiza*[*].

In coloration it differs greatly from *P. cæsar* and the other species of the genus *Poospiza*. All the underparts are of a fine orange-rufous, this colour being more intense on the throat and breast, and paler or more fulvous on the middle of the abdomen. The forehead and fore part of the crown are of the same orange-rufous as the underparts, and this colour is prolonged over the eye to the sides of the occiput, to form a broad but short superciliary band. Beneath the eye there is a band of the same tint, which

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[*] POOSPIZOPSIS, mihi, gen. nov., generi *Poospizæ* affinis, sed differt rostro pedibusque multo fortioribus et alis caudaque longioribus. Typ. *Poospiza cæsar*, Scl. & Salv.

Obs. Generi *Poospizopsis* nuncupando (typ. *P. cæsar*) affinis, sed rostri exigui forma, necnon coloribus, differt.

COMPSOSPIZA GARLEPPI, sp. nov. (Plate VI.)

Pileo anteriore et tænia utrinque superciliari brevi et lata

begins at the mouth and ends some distance behind the eye. The lores and the remaining part of the sides of the head, the sides of the neck and all the remaining upper parts, the sides of the body and the exposed portion of the wings and the tail are of a fine dark plumbeous grey. The concealed parts of the wing and the tail are blackish. The three outer pairs of tail-feathers show a narrow rufous-white margin at their tips. The under tail-coverts are coloured like the breast. The under wing-coverts and the metacarpus are plumbeous grey varied with rufous. The upper mandible is blackish; the under mandible is plumbeous, whitish in the middle portion. The feet are fleshy brown.

This fine new Finch I have named after its discoverer, Mr. Gustav Garlepp, of Cöthen, Anhalt, who has spent several years in Bolivia collecting butterflies, birds, and other objects of natural history. His collection of Bolivian birds embraces about 2000 specimens, and among them are many novelties. Mr. Garlepp, who has recently returned to Germany, intends to recommence his researches in Bolivia this year, and will doubtless make some more interesting discoveries in that little-known country.

I am glad to be able to add some notes respecting the habits of *Compsospiza garleppi*, which Mr. Garlepp has kindly forwarded to me. He writes as follows:—

"On the road from Sta. Cruz de la Sierra to Cochabamba one crosses the Puna—that is, the cold region of pastures,—which is more than 3000 mètres above the sea-level. The passage through this region takes about a day's journey. Nearly in the middle of this hilly district, which is bounded on both sides by two parallel ranges of the Cordillera, at the foot of the eastern and higher range, where a small stream springs from a deep ravine, but still in the plain, the village of 'Vacas' is situated. Here I stayed from the end of August to the middle of September 1890, and, besides other acquisitions, succeeded in procuring a specimen of this conspicuous Finch.

"Vacas is about 12,000 feet above the sea-level. On the plain around potatoes and barley flourish, but the climate does not allow the cultivation of wheat. In general the vegetation here is very poor, and consists only of gramineous plants and small herbs. The banks of the small stream form an exception, and here are to be found a few shrubs and a few plain-looking flowers.

"Here, on one of my first excursions, in walking upwards along the small stream I fell in with this Finch, which strikes the eye at some distance by its beautiful orange-rufous plumage. It is commonly met with in pairs, and often rests a long while on the dead twigs of the shrubs, flying away as soon as anyone approaches. Consequently I have often tried in vain to get a shot at it. Sometimes I followed these birds far upwards along the stream, where the shrubs are found more sparingly; then the birds rose in the air, and, flying high over my head, returned to the place where I first met with them, and I had to recommence the laborious pursuit on a difficult and rocky ground. Therefore I did not succeed in obtaining more than this single specimen.

"Although I have often observed the bird, I never heard its song. I have always met with it in pairs. It seems to be a very local species, as I never met with it in other similar places. The stupid inhabitants of the village did not know the bird, nor could they give me a name for it."

XVII.—*Remarks on the Birds of the Gilbert Islands.*

By L. W. Wiglesworth.

The Gilbert Islands, recently taken under British protection *, consist of twelve atolls, or rings of coral islets encircling a lagoon, and of four other small coral islands. All are of the "low" description, as distinguished from "high" islands of volcanic origin, like Tahiti and Ponapé, or of upheaved coral, like Savage Island; and the dry ground, formed of coral sand and fragments of shells thrown up by the waves, nowhere rises to a height of more than fifteen or twenty feet above the level of the Pacific. According to a computation made by Dana*, the total area of four of the larger atolls amounts to only 25 square miles, so that all the islands taken together cannot possess a habitable surface of 100 square miles, and may be regarded as about equal in area to Guernsey, or Jersey, or the half of Rutlandshire. The extent of reef, however, was ascertained by Dana to be seventeen times as great; and this figure, though large, is again far exceeded in the neighbouring Marshall Islands, where the proportion of dry ground to reef is 1 : 100 to 200. In such a soil, as might be expected, very few species of trees and plants have ever contrived to gain a footing and to subsist, notwithstanding the fact that such quantities of drift-wood are brought to the shores of these islands and the Marshalls by ocean currents and the trade winds that the natives of the last-named make use of it for the side-planks of their boats. Nevertheless, such forms of plant-life as are found here—cocoanut-palms and screw-pines being most conspicuous—often flourish in abundance. Many of the Gilbert Islands are spoken of as being well-wooded, and the more fertile southern islands of the Marshall group have so luxuriant an appearance that one of them, Ebon, is described by Mr. Gulick, who resided there, as "almost a small Paradise"†.

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* [The British flag was hoisted on Apamana Island by Capt. Davis, of H.M.S. 'Royalist,' on May 27th, 1892. See Ill. Lond. News, vol. 101, p. 325 (Sept. 10th, 1892).—Ed.]

Where little diversity of vegetable food exists, only a small number of animal species can be expected. As to the Gilbert Islands themselves, I have been able to find no general notes on the fauna; but it is not impossible that some may have escaped my notice, inasmuch as the group has, I believe, been visited for missionary purposes by two able naturalists, Mr. Gulick and Mr. Whitmee. Chamisso, however, who still remains one of the chief authorities for what is known of the very similar Marshall Islands, was able to record there only rats, fowls (tame and feral), Herons (doubtless *Ardea sacra*), *Columba australis* (this must be *Carpophaga*

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* In his 'Coral Islands'; quoted by Meinicke, Zeitschr. f. allgem. Erdkunde, 1863, p. 376.

† *Cf.* Meinicke's valuable articles, *op. cit.* pp. 369–417, and in 'Die Inseln des stillen Oceans,' 1876, ii. 316–331. Mr. Gulick's papers, which I have not been able to refer to directly, were published in the 'Nautical Magazine,' 1861, 1862.

oceanica, the only Pigeon found there by Dr. Finsch), "Wald- und Wasservögel," *Sterna stolida*, four species of small lizards, a *Scolopendra*, and a *Scorpio* (Kotzebue's 'Reise,' iii. pp. 112–114). To these may be added two genera of Lepidoptera ("Schmetterlinge") mentioned by Herr Franz Hernsheim, the German Consul at Taluit, in a little work on 'Die Sprache der Marschall Inseln,' 1880, p. 34, which contains also a few botanical notes and figures.

Almost all that is known concerning the birds of the Gilbert Islands, as also of the Marshall Islands, rests upon the observations of Dr. Finsch, who found an opportunity of visiting the group in November and December, 1879, in a small ship engaged in the labour traffic. The ship sailed to five of the larger atolls, and an interesting account of the birds obtained or seen upon or near them will be found in Dr. Finsch's "Ornithological Letters from the Pacific: No. IV." (Ibis, 1880, p. 429). Some additional remarks are made in one of a series of articles in the Mitth. des ornith. Vereins zu Wien, 1884, viii. pp. 125–127, published separately as 'Die Vögel der Südsee Inseln.' According to Dr. Finsch, not a single species of land-bird is to be found in the Gilbert Islands, except the remarkable migrant Cuckoo, *Urodynamis taitiensis* (Sparrm.)[*]. The natives of the Marshall Islands assert that this species occurs there in single individuals all the year round, and it was twice observed at Butaritari in the Gilberts on December 7th by Dr. Finsch. This is the breeding-time of the species in New Zealand, and Dr. Finsch, in pointing to the probability that its migrations are irregular, and that it may breed in other islands of the Pacific, calls attention to Sir Walter Buller's notice of a female from New Zealand with a large bare breeding patch. This observation was repeated by Dr. Finsch in a female from Taluit in the Marshalls, which had a similar bare spot extending from the sternum to the anus. Several cases in proof of the parasitic habits of this Cuckoo are given in the second edition of the

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[*] In my 'Aves Polynesiæ,' I have noted *Carpophaga oceanica* for Tarowa and Maraki, but this is an error. The localities mentioned should come under the head of *Ardea sacra*.

'Birds of New Zealand' (1888); but, should the species breed in the Marshall Islands, it must of necessity care for its own eggs and young, "since land-birds, which could serve as foster-parents, are known to be absent" (Mitth. orn. Ver. viii. p. 126).

Other interesting species of the Gilbert Islands are the northern winter migrants, *Charadrius fulvus, Strepsilas interpres*, and *Actitis incana*; single individuals of these, according to Dr. Finsch, are to be met with everywhere amongst the atolls throughout the year. One is led to think that such specimens, as, perhaps, also the Cuckoo, are stragglers which have lost their way and all sense of their whereabouts, and remain prisoners through not knowing whither to fly.

The sea-birds noted by Dr. Finsch belong to wide-spread species. The Skua seen, but not determined, may, perhaps, have been *Lestris hardyi*, Bp., the type of which came from the Pacific between the Philippine and Sandwich Islands, and which remains, so far, the only Skua recorded from Polynesia*.

Prior to Dr. Finsch's expedition, the islands were surveyed between 1822–25 by the 'Coquille,' but no ornithological notes seem to have been made. Again, they were visited by Hudson, the companion of Wilkes, of the United States' Exploring Expedition, 1838–42, and the names of four common sea-birds were recorded. A note of Pickering, in the volume relating to the anthropology of the expedition (ix. p. 313), mentions that fowls also were seen: these "were not eaten, but kept in cages for fighting purposes." At Nawodo, a high island to the west of the group, inhabited, according to Meinicke, by Gilbert-Islanders, Dr. Finsch saw *Strepsilas interpres* kept in neatly-made cages for the same purpose.

In view of the fact that the Gilbert Islands are said to have no small land-birds, it is interesting to find an early observation suggestive of the contrary made by Kotzebue on the sea between this group and the Ellice Islands to the south. It seems probable that some land intervenes in this space, for Kotzebue passed over it in his second voyage. "From lat. 5° S.

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* Mr. Saunders (P. Z. S. 1876, p. 331) refers *Lestris hardyi* to *Stercorarius parasiticus*, Ed.

to the Equator, we daily perceived signs of land. When in lat. 4° 15′ and long. 178°, heavy gales brought swarms of butterflies and small land-birds to the ship. We looked in vain for land; therefore this discovery remains for some future navigator." ('South Pacific Directory,' 4th ed. 1877, p. 756.) The Gilbert Islands have nothing on three sides of them but groups of low coral islands like themselves,—the Marshall, Ellice, and Phœnix Islands, which are said to be equally destitute of small land-birds; and the nearest place where such are known to occur is the small, high, Nawodo or Pleasant Island, about 300 miles to the west, where Dr. Finsch discovered his *Tatare rehsei*, a species as plentiful there as Sparrows in England. Another island, lying between this and the Gilbert Islands, and which may be expected to harbour small land-birds, is Ocean Island (Banaba or Paanapa), but this spot has never been visited by an ornithologist. It is said to be from 10 to 15 miles in circumference, having a hill in the middle which can be seen at a distance of 25 miles. Now that the Gilbert Islands have been taken under British protection, it is to be hoped that some one will find an opportunity of enlarging our scanty knowledge of the ornithology of these atolls. Outlying high islands like Ocean and Nawodo, where Dr. Finsch was only able to spend six hours, should also be visited.

Glancing farther afield, other attractive-looking spots in Polynesia: are Kushai or Ualan, known from graphic descriptions in Kittlitz's 'Reise,' and which, among other things, furnished the only two specimens known of *Rallus monasa*, Kittlitz, now found by Dr. Hartlaub to belong to a distinct genus (*Aphanolimnas*) [*]; Rapa in the Austral group, only known as the habitat of *Ptilopus huttoni*, Finsch; and, more especially, the Society and Marquesas Islands, where something more may remain to be discovered, and where there is some reason to fear that some of the birds—the Parrots for instance—found there more than a century ago by the naturalists accompanying Cook are becoming rare, or in one or two

[*] *Cf.* Hartlaub, "Vier seltene Rallen," in the 'Verh. Ver. Bremen,' 1892, also Sharpe, Bull. B. O. C. no. iv. p. xix.

cases are even extinct. Thus, *Cyanorhamphus ulietanus* (Gm.) appears to be known by only one specimen in the British and one (the type) in the Vienna Museum, and has never been heard of since the time of Latham; *C. erythronotus* (Gm.) was seen again and last in four or five specimens only by Lieutenant Marolles during a stay at Tahiti of twenty months ending in 1844 (Finsch, 'Papageien,' ii. 268); *Coriphilus taitianus* (Gm.) is said by Mr. Garrett, a former collector of the Godeffroy Museum, to have become extinct in the islands of Huaheine, Raiatea, and Tahea (Cat. Mus. Godeffr. 1874, v. p. xvii), but it still occurs on many other islands; neither has anything been heard of *Turdus ulietensis*, Gm., since Forster's time, nor of *Rallus tahitiensis*, Gm. But an excellent law of the French, forbidding the destruction of birds in the islands over which they have authority, may perhaps have enabled these species to survive up to the present.

For a list of the birds of the Gilbert Islands, see Dr. Finsch's letter in 'The Ibis,' 1880, pp. 433, 434, to which only *Gallus bankiva*, var.?, can be added.

Since this paper was commenced, we have annexed the neighbouring Ellice atolls. The only notes on the birds of these islands with which I am acquainted are to be found in a short paper by Dr. R. B. Sharpe in P. Z. S. 1878, pp. 271–273, with a communication adjoined from Mr. Whitmee. The following eight species are enumerated:—*Ardea sacra*, Gm.; *Anous cæruleus* (F. D. Bennett); *Anous stolidus* (Linn.); *Anous leucocapillus*, Gld.; *Sterna anæstheta* (Scop.); *Gygis candida* (Gm.); *Fregata aquila* (Linn.); and a *Carpophaga*, which was believed by the collector, Herr Fritz Hansen, to be *C. pacifica*. It is, perhaps, more likely to be *C. oceanica*, Lesson.

XVIII.—*On the Bird indicated by the Greek* Ἁλκυών.

By H. B. Tristram, D.D., F.R.S.

A short time ago my friend Dr. W. Greenwell, F.R.S., showed me an archaic Greek coin which bore on its obverse the figure of a cow with a bird on its back. He asked me what bird I thought was represented there. I replied without hesitation, "A Tern." He then said he was equally certain that it was a Tern. The coin is one of the only two similar coins known, of Dicæa, on the Thracian coast, a colony of Eretria in Eubœa. But coins with the same symbols from Eretria are well known. The cow is probably Io; who is connected with Eubœa, where she is said to have brought forth Epaphus; and who was worshipped as a moon-goddess at Eretria. The Tern would fitly accompany Io, as her wanderings were chiefly by sea. But the sacred bird of Eretria was *ἡ ἀλκυὼν*, and no other bird than the Tern has ever been found on any Eubœan coin. Now all modern naturalists, from the earliest writers previous to Linnæus downwards, have identified *ἀλκυὼν* with the Kingfisher. But the identification is open to doubt. The fullest account of *ἡ ἀλκυὼν* is that given by Aristotle, who (Hist. Anim. v. 8) relates the tale of the 'Halcyon days,' referring to the poet Simonides; and states that this bird breeds in midwinter, during 14 days given it by Jupiter at the time of the setting of the Pleiades. He adds that in the Sicilian seas the *ἀλκυὼν* is almost always to be seen, but not so in Greece; and he implies that it makes a floating nest on the sea. Again (*op. cit.* viii. 5), he says the *Halcyon* family (*ἀλκυόνων γένος*) are water-birds; that there are two species, one which has a note and breeds among the reeds, the other larger and without a song, and that both have the back *κυανοῦν*; and he puts the Divers and Gulls next the *Halcyon*. But again Aristotle (*op. cit.* ix. 15) describes the Halcyon as not much larger than a Sparrow (*στρουθὸς*), and its colour *κυανοῦς*, *χλωρὸς*, and reddish; all being mingled. Afterwards he describes the nest as a hollow tube, and probably made of the bones of fishes.

Ælian, in his 'Natura Animalium,' casts no further light on the question, merely expanding the myth of the Halcyon days in midwinter, and also minutely describing the manner in which the bird constructs its nest of spines on shore, and then carries it down to the sea and launches it. Pliny does but repeat Aristotle's story. I cannot find any other passages in classical authors which will aid in the identification.

It seems probable that Aristotle, *op. cit.* ch. ix. 15, intended to describe our *Alcedo ispida,* but that he erroneously transferred to it the myth of the Halcyon days, which really belonged in popular belief to the Tern (*Sterna fluviatilis*). In all the other passages referred to, he seems to be speaking of the Tern, placing it next the Divers and Gulls (*αἴθυια* and *λάρος*). The specification which he gives of the colour is that the back is *κυάνεος*, *i. e.* sea-coloured, a term which is best rendered by "slaty grey," being applied elsewhere to clouds, human hair, and dark masses, never to blue. This exactly agrees with the colour of the back of *Sterna hirundo.* Aristotle adds that there are two species, a larger and a smaller, both of the same colour, and the smaller one breeding in rushes. This well corresponds with the two species most common in Greece, *S. fluviatilis* and *S. hybrida,* of which the latter and smaller species breeds in marshes, the former on the sea-shore. It is true that there are two Kingfishers common in Greece, but evidently the second species, *Ceryle rudis,* was not considered by Aristotle, its coloration being entirely different from the other. My concluding inference is that the poetic tales of the Halycon must be attached to the graceful Sea-Swallow, and not to the Kingfisher of our river-banks.

XIX.—*On the Species of* Zosterops *found in the Island of Java.* By Henry Seebohm, F.Z.S.

If the legends respecting the invasion of New Zealand and the Chatham Islands by the Australian White-eye, *Zosterops cærulescens,* be true, it must be admitted that the White-eyes have a genius for emigration. Wherever they are found they are extremely common, and there is abundant evidence in their geographical distribution to prove that many emigrations have taken place since the original differentiation of the ancestors of the genus. There are two species of this genus in Norfolk Island and two on Lord Howe Island; New Caledonia possesses two species, and Lifu (one of the Loyalty group) is inhabited by three. The island of Java is inhabited by no fewer than six species of *Zosterops.*

Of these six species four have been recorded from West Java and two from East Java. Two of the West-Javan species are known with certainty only from that island, and differ from all other species of the genus in having the crown and nape ash-grey, in strong contrast to the olive of the rest of the upper parts. They have been regarded as so aberrant that they have been separated under the generic name of *Oreosterops* (Bonaparte, Compt. Rend. xxxviii. p. 261). *Zosterops fallax* is described as very common in West Java, and *Zosterops javanica*, which differs from it principally in having a broad white eye-stripe, was brought from West Java by Dr. Horsfield. In both these species the belly and flanks are yellow. The third West-Javan species has a wide range, from South Tenasserim and the Malay Peninsula to Borneo, Sumatra, and Timor. *Zosterops auriventer* belongs to the typical group in which the crown and nape are olive like the rest of the upper parts. It may at once be distinguished from the other Javan species by its bright yellow belly, which is very conspicuous between the ash-grey flanks. It would be very interesting to be sure that the locality of Timor is correctly assigned to this species, and, if so, to know whether it occurs in East Java.

The fourth West-Javan species has also been recorded from Sumatra and Borneo, and appears to be closely allied to the species described from East Java. Both are olive above and yellow beneath, but in the latter, *Zosterops gallio*, there is a black spot in front of the eye, which is absent in the former, *Zosterops flava*.

The sixth Javan species was discovered in 1886 by Mr. Whitehead, at an elevation of 5000 feet above sea-level, near Tosari in East Java. It appears to have been identified with *Zosterops auriventer* Sharpe, Ibis, 1889, p. 127—a perfectly distinct species with ash-grey flanks and bright yellow belly. Mr. Whitehead's bird is most nearly related to the Indian White-eye *Zosterops palpebrosa*, and is probably not more than subspecifically distinct from that widely-spread species. In the colour of the upper parts it is intermediate between *Zosterops palpebrosa* and *Zosterops simplex*, being greener than the Indian species but yellower than the Chinese bird

The colour of the underparts beneath the breast is slightly paler than in either of these races, the dusky spot in front and underneath the eye is much less distinct, and the tail appears to be slightly longer (1·6). I have proposed to call this species *Zosterops neglecta* (*cf.* Bull. B. O. C. no. v. p. xxvi).

The six species of Javan *Zosteropes* will therefore stand as follows:—

		Other localities.
(1) *Zosterops fallax.*	W. Java.	Sumatra.
(2) *Z. javanica.*	W. Java.	
(3) *Z. auriventer.*	W. Java.	Malay Penins., Sumatra, Borneo, and Timor.
(4) *Z. gallio.*	E. Java.	
(5) *Z. flava.*	W. Java.	Sumatra, Borneo.
(6) *Z. neglecta.*	E. Java.	

XX.—*On the Species of* Merula *found in the Island of Java.*

By Henry Seebohm, F.Z.S.

Horsfield's Ouzel was discovered in some part of West Java by Dr. Horsfield between the years 1811 and 1817, and was described by him in a paper entitled "Systematic Arrangement and Description of Birds from the Island of Java," which was read at a meeting of the Linnean Society of London on the 18th of April, 1820, under the name of *Turdus javanicus* (Horsfield, Trans. Linn. Soc. xiii. p. 148). The types were presented to the Museum of the East India Company in 1819 (Horsf. & Moore, Cat. Birds Mus. E. I. C. i. p. 196), and are now in the British Museum*.

This species was rediscovered in West Java on the crater of Mount Gedee, about 8000 feet above the level of the sea, by Salomon Müller some time between the years 1828 and 1836, and received the name of *Turdus* (*Merula*) *fumidus* (Müller, Verh. Nat. Gesch., Land- en Volkenk. p. 201), the types of which are in the Leyden Museum.

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* There are three types of Horsfield's *M. javanica* in the British Museum, which are apparently male, female, and young. The adults differ from all other Javan examples known in having the chestnut restricted to the belly, and not extending to the flanks. The white on the under tail-coverts is also reduced to a shaft-line in the male. It is possible that they may have been procured on some other mountain, and that *M. fumida* may be specifically distinct from *M. javanica*.

In 1844 a third name was bestowed upon Horsfield's Ouzel, viz. *Turdus hypopyrrhus* (Hartlaub, Syst. Verz. der Mus. Bremen, p. 43), the previous descriptions of the bird having been either unknown to Dr. Hartlaub, or having appeared to him so vague as to be unrecognizable. The type of this description is in the Bremen Museum, and from the excellent figure of it (Sclater, Ibis, 1875, p. 346, pl. viii.) it appears to be a not very old male from West Java.

In 1861 Mr. Wallace obtained examples of this Ouzel (one of which is in the British Museum) in almost the same locality. In his 'Malay Archipelago' he describes his visit to the extinct volcano of Pangerango, and mentions that on its summit, about 10,000 feet above the level of the sea, he found this bird feeding on the ground among the strawberries that have been planted there.

There does not seem to be any foundation for the statement made in 1847 (Blyth, J. A. S. B. xvi. p. 143) that the name of *Turdus concolor* was given to this species by Temminck (Büttikofer, Notes Leyd. Mus. xv. p. 108). The statement made in 1854 (Bp. C. R. xxxviii. p. 6) that Dr. Schiff had named the example in the Senckenberg Museum in Frankfort *Turdus nigricrissus* is also, as I am informed by Mr. Hartert, equally unsupported by evidence.

This species has also been stated to occur in Sumatra and Borneo under the name of *Turdus fumidus* (Bp. Consp. i. p. 274), but I can find no evidence in favour of the correctness of either of these localities, except that there is a skin in the British Museum labelled "Borneo," purchased from Verreaux, which, however, can scarcely be regarded as proof that it was shot there.

That there should exist a second, and possibly a third, species of *Merula* in the island of Java seems at first sight somewhat improbable, but when it is remembered that *Merula javanica* has been found only in West Java, and then at elevations of from 8000 to 10,000 feet, the occurrence of a closely allied species in East Java, two hundred and fifty miles away, at an elevation of 7000 feet above sea-level, must be considered by no means improbable. The genus *Merula* is an arctic and subarctic one, and the species found in the tropics seek the greatest elevations they can find, so that the *Merulæ* of West Java are practically isolated from those of East Java by the tropical plains which intervene. I have proposed to call the East Javan species *Merula whiteheadi**: in the first place because it was discovered by Mr. Whitehead, who met with it near Tosari at an elevation of 7000 feet, in August and September 1886. This was during the memorable expedition to the islands of the Malay Archipelago which culminated in the exploration of Mount Kina-Balu in North Borneo, where Mr. Whitehead discovered more than forty new species of birds. In the second place, the name *whiteheadi* is singularly appropriate, as it serves to fix on the memory the peculiar character of the species, which is distinguished from its West-Javan ally by the much greater whiteness of its head. In the adult male the head is pale grey, in the female it is darker grey, and in the young in first plumage brownish black. In other respects *M. whiteheadi* agrees closely with *Merula javanica*. The under tail-coverts of the female and young have broad white shaft-streaks, which are reduced to pale shafts in the adult male. The feathers round the vent seem to be always white.

If the East-Javan Ouzel be distinct from the West-Javan Ouzel, the next question which arises is its distinctness or otherwise from the Timor Ouzel.

Merula schlegeli was discovered near Penpaan in a mountain valley in the interior of the island of Timor by Salomon Müller some time between the years 1828 and 1836, but was regarded by its discoverer as merely a variety of Horsfield's Ouzel (Müller, *op. cit.* p. 201). The single example from Timor remained in the Leyden Museum for twenty years before it was observed to be different from its Javan ally, when it was named *Turdus schlegeli* (Sclater, Ibis, 1861,

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* *Cf.* Bull. B. O. C. no. v. p. xxv.

p. 280). Fourteen years afterwards, a further attempt to vindicate the character of the supposed new species was made (Sclater, Ibis, 1875, p. 344), but, in consequence of an error in the diagnosis, the distinctness of the two species has not been generally recognized. Both species are described as "supra fuscus unicolor," the characters relied upon being the absence of the white shaft-streaks on the under tail-coverts and the white feathers round the vent in the Timor species. Inasmuch as the former character varies so much with age and sex, and the latter is so easily lost in the preparation of the skin, ornithologists naturally did not recognize the distinctness of the Timor species from the Javan one, which was supposed to range west to Sumatra and north to Borneo. We now learn, however (Büttikofer, Notes Leyd. Mus. xv. p. 109), that the Timor bird resembles the East-Javan species in the pale colour of the head, neck, and throat, but differs from it in having no white on the vent or under tail-coverts. It thus appears that the attempt to maintain the distinctness of the Timor species was based upon a true geographical instinct, though one of the main arguments for the defence was overlooked.

Two other very closely allied *Merulæ* are found in the Malay Archipelago. *Merula seebohmi* Sharpe, Ibis, 1888, p. 386 was discovered in 1888 on Kina-Balu in North Borneo, and *Merula celebensis* was obtained by Mr. Teysmaan in 1877 at Macassar in Celebes, though it has only recently been described (Büttikofer, Notes Leyd. Mus. xv. p. 109). The new species appears to be closely allied to *Merula seebohmi* and *Merula celænops*, having the chestnut of the underparts very rich in colour and covering the whole breast. It further resembles the latter species in having the upper parts below the neck suffused with olive, but probably differs from it in having the white on the belly confined to the vent.

XXI.—*Notes on Birds observed during a Collecting Expedition to Eastern Africa.* By Frank Finn, B.A., F.Z.S.

The main object of my journey to East Africa having been to collect Oligochæte Worms, and my stay but a short one, I did not form a collection of bird-skins, though the kindness of the British residents enabled me to bring home a number of living specimens. With these, and with other species which I have been able to identify from my notes, with the kind assistance of Dr. Sclater, Dr. Bowdler Sharpe, and Count Salvadori, the present paper is concerned.

I left England by the British India steamer 'Java' on June 6th, arriving on July 11th at Zanzibar, where I stayed till August 8th. On that day I started for Mombasa by the coasting-steamer 'Juba,' which touched at Wasin, on the way, long enough to allow some of us to go ashore. I stayed at Mombasa till September 14th, when I left for England by the British India steamer 'Malda,' and arrived early in October. It being the fine season when I was in East Africa, I found the climate very pleasant, the temperature about that of an English summer, with occasional heavy rain-showers. In Zanzibar I stayed at the Hôtel Perrot, on the outskirts of the town and close to the shore. At Mombasa I enjoyed the hospitality first of Mr. F. Pordage, of English Point, on the mainland, and afterwards of Mr. T. Remington and Mr. Maclellan, at the Fort Bungalow, Mombasa Island, near the ancient Portuguese fort—a locality that abounded with birds of several species, most of which were very tame. General Mathews, of Zanzibar, was extremely kind, and gave me much valuable assistance in my work and many rare specimens. I am also greatly indebted to Mr. R. Macalister, of Kilindini, Mombasa, and I gladly take this opportunity of expressing my obligations, not only to the gentlemen mentioned, but generally to the Europeans with whom I came in contact in East Africa and on my journey to and fro, for the unvarying kindness and consideration with which they treated me. The species of which I brought home living specimens are marked with an asterisk. References are given to the published volumes of the Catalogue of Birds in the British Museum.

CORVUS SCAPULATUS. (Cat. B. iii. p. 22.)
This seems to be the Crow of the country, but is not very abundant, at least on the coast, to which I was almost entirely confined during my stay.

CORVUS SPLENDENS. (Cat. B. iii. p. 33.)
The "Bombay Crow," which is now fairly plentiful in the town of Zanzibar, has been recently introduced. Sir Gerald Portal told me he had seen it capture a "Chiriko" (*Crithagra*) on the wing. This Crow was imported as a scavenger; it does not yet appear to display the impudence characteristic of it in its native country. The "Chiriko" referred to is a not uncommon cage-bird in Zanzibar, and is usually kept in a cage with two side compartments fitted up as traps, so that it is both a pet and a decoy. I saw one wild at Mombasa.

BUCHANGA ATRA, var. ASSIMILIS. (Cat. B. iii. p. 247.)
I sometimes saw examples of this species at Mombasa.

LANIUS, sp. inc.
A large grey Shrike came on board the 'Java' in the Red Sea in a very exhausted state; the next day, however, it revived and ate cockroaches from the hand, though still almost unable to fly. On the following day it was so tame that it ate a cockroach while sitting on my finger, grasping the insect with one foot, as it usually did when feeding.

At Aden I offered it a small shore-crab, which it readily ate, having probably been used to such diet on the barren land whence it had come. Unfortunately it escaped on the day after leaving Aden, making for land (about 60 miles off) with a Magpie-like flight, against a head wind. I am therefore unable to identify the species. In plumage it was more like *L. excubitor* than *L. lahtora*, but had strong legs and feet.

TELEPHONUS SENEGALUS. (Cat. B. viii. p. 124.)
Common in the low bush on Mombasa Island; has a whirring flight.

Cisticola subruficapilla. (Cat. B. vii. p. 283.)

Very common on Mombasa Island near the fort. It usually has the soft plumage puffed out like a Tit's, but occasionally compresses it to the body, and then has a very graceful appearance, in spite of the rather coarse legs and feet, which are conspicuously flesh-coloured. It often utters a note like "chizzick," frequently repeating it from a telegraph wire. These wires must be regarded by the birds here as a most useful innovation, affording, as they do, a very convenient perch.

Erithacus luscinia. (Cat. B. v. p. 294.)

A Nightingale came aboard in the Mediterranean on September 28th.

Saxicola œnanthe. (Cat. B. v. p. 391.)

On the evening of September 30th a Wheatear came to the ship, apparently weary, but flew low over it without settling.

Ruticilla phœnicurus. (Cat. B. v. p. 336.)

A female Redstart was on the rigging on October 4th, two days after we left Naples.

Motacilla flava. (Cat. B. x. p. 510.)

Wagtails, apparently of this species, frequently flew about and came aboard on the journey home, some in the Red Sea and some in the Mediterranean. Indeed scarcely a day passed without some bird or other coming aboard, but it was not always possible to identify the small Passerines. A *Sylvia* in the Red Sea and a *Phylloscopus* in the Mediterranean came aboard and I caged them, but they soon died, though the former fed. The Wagtails were often very tame, but I could not catch them.

Sturnus vulgaris. (Cat. B. xiii. p. 27.)

A pair alighted on the ship on October 4th, but left immediately, and I saw another on the following day.

Hyphantornis bojeri. (Cat. B. xiii. p. 448.)

This bird was extremely abundant at Mombasa, especially on the island, if the dull streaky greenish-yellow specimens, much like the female *H. galbula*, are the female and young of *H. bojeri*, of which the brightly coloured male only appears to be known. These bright specimens are a small minority. The species is social both in feeding and nesting; the nests are hung from the fronds of the cocoanut-palms, even in the town of Mombasa. The birds feed on the low plants, where, I presume, they find insects. Nestlings were brought to me at the Fort Bungalow by native boys, and a fledgling even flew into the bungalow on one occasion.

Estrelda phœnicotis. (Cat. B. xiii. p. 400.)

Very common at Mombasa, but less abundant than the preceding, from which it differs in being a ground-feeder. I believe it eats small grass-seeds and minute insects. It is usually seen in pairs, not in flocks.

Munia oryzivora. (Cat. B. xiii. p. 328.)

The "*Zawaridi*" was introduced into Zanzibar, I was told, about 30 years since, and is now so common as to be used as food with other small seed-eating birds. It does not seem to descend into the streets, like the Sparrow at home, and I am at a loss to understand on what it feeds in the town, where it is constantly to be seen about the house-roofs. It is said to be driving the other small birds out of the town, but one can pardon much to so ornamental a species.

Passer diffusus (sive swainsoni). (Cat. B. xii. pp. 334, 336.)

I do not know to which of these species to refer a plain-coloured Sparrow found both at Zanzibar and Mombasa, at which latter place I had good opportunities for observing it at the Fort Bungalow. It feeds on the ground, with the gait of a Chaffinch, and when perched on a telegraph wire its contour suggests a Shrike.

Pycnonotus layardi. Cat. B. vi. p. 132.

This Bulbul is common all along the part of the coast I visited, and I observed it especially on the Mnazi-moja grounds at Zanzibar and near the fort at Mombasa, where it was very tame, a pair coming constantly to feed from a box of kitchen-scraps on the verandah of the bungalow. It sometimes, when perched, expands and depresses the wings and tail, and its pleasant, careless song is the most characteristic bird-music of this coast.

Irrisor viridis. (Cat. B. xvi. p. 17.)

I saw this bird on two occasions, at Zanzibar and at Kilindini, on Mombasa Island. Its flight is much like that of a Magpie, but it certainly reminds one of a rather small Hornbill when on the wing.

Lophoceros melanoleucus. (Cat. B. xvii. p. 399.)

I saw some small dark red-billed Hornbills on the edge of the jungle at Wasin, which I think belonged to this species. They flew in a peculiar manner, alternating a heavy flap or two with a short sailing interval, and held themselves upright when perched. While speaking of Hornbills, I may mention that Dr. Baxter, of the Church Mission Society at Freretown, Mombasa, suggested to me, as an explanation of the great hollow casques and bills of the large forms of this family, that they act as resonators to increase the power of the cry, which is so remarkable in these birds.

Ceryle rudis. (Cat. B. xvii. p. 109.)

I saw this bird in Mombasa harbour. Its flight is much slower than that of the next species.

Alcedo ispida. (Cat. B. xvii. p. 141.)

I saw two specimens of the Common Kingfisher on my homeward journey, one in Port Said harbour and one in the Suez Canal. I also saw Kingfishers of the genus *Halcyon* at Mombasa, and noticed in one case a distinctly undulating flight.

Merops nubicus. (Cat. B. xvii. p. 85.)

This splendid bird, the plumage of which in some lights looks like burnished copper, was common on Mombasa Island, where I also saw a green Bee-eater. ***M. nubicus*** is known as the "Fire-bird."

Coracias caudatus. (Cat. B. xvii. p. 21.)

Not uncommon at Mombasa. The affinity of the bird both to the Kingfishers and the Bee-eaters is obvious when it is watched alive. Local name "Blue-Jay."

CORACIAS GARRULUS. (Cat. B. xvii. p. 15.)

A Roller of this species alighted on the ship's yard on September 20th, on the day after we had passed Cape Guardafui on our way to England. I got a fairly good view of it.

CHRYSOCOCCYX CUPREUS. (Cat. B. xix. p. 285.)

One, and sometimes two, of these birds used to frequent the little backyard of the hotel in Zanzibar to feed on the larvæ of a moth much resembling the English gold-tail (*Porthesia auriflua*). The larvæ were black and yellow, and sparsely haired. The birds ate large numbers of them, hopping and flying leisurely from branch to branch. Their flight, when protracted for any distance, resembled that of a Missel-Thrush, but was lighter. When together they frequently spread the tail, usually erecting it, and their note was sometimes whistling and sometimes resembled that of a young Duck.

* CENTROPUS SUPERCILIOSUS. (Cat. B. xix. p. 363.)

I heard the note of this Cuckoo, somewhat like the sound of water poured out of a bottle, in Zanzibar and Mombasa, and in the latter place frequently saw the bird, which was very common, especially on the island. It has other notes, short and harsh, and the specimen brought home often uttered a low growling note when alarmed; on one occasion, when held in the hand, it deliberately scratched me, drawing blood. Possibly the long claw of the hallux is a weapon of offence. The flight of this bird is heavy and weak, but its powers of running, and especially leaping, are very great. It is known in Mombasa as "Wood Pheasant."

* GALLIREX CHLOROCHLAMYS. (Cat. B. xix. p. 447.)

A very fine and tame specimen of this bird was the gift of General Mathews, who very kindly put a good collection of living animals on board the 'Malda' when it left Zanzibar. The present individual had been kept in confinement and was quite a pet. When played with it frequently displayed its crimson primaries. It is now in the Zoological Society's Gardens, and is in excellent plumage.

Colius affinis. (Cat. B. xvii. p. 342.)

Common on Mombasa Island. Its flight is much like that of a Partridge, but less violent.

Tachornis parva. (Cat. B. xvi. p. 463.)

Common at Zanzibar. I also noticed these singular Swifts elsewhere.

Caprimulgus europæus. (Cat. B. xvi. p. 526.)

Seen on the voyages out and home in broad daylight on several occasions. A smaller, redder, and shorter-winged Nightjar alighted on the ship the day after we left Aden; and a species similar in size and proportions to this might be nightly seen at Mombasa on the trolly-track running to Kilindini.

Pœocephalus fuscicapillus. (Cat. B. xx. p. 368.)

I met with this bird on a few occasions in captivity at Zanzibar and Mombasa, and wild some miles away from the latter town on the mainland. It flies with a quicker stroke of the wings than one would expect from their length.

Psittacus erithacus. (Cat. B. xx. p. 377.)

A common pet with Hindoos, Goanese, and Europeans, being brought down from the interior.

Milvus, sp. inc.

Kites are common at Aden and down the East-African coast, and often very tame, but I should not like to decide as to the species, especially as I have heard of the introduction of Kites from India. Kites have been tried as scavengers at Zanzibar, but will not stay. They are most dexterous in snatching their food off the water, which I have seen one do without leaving a perceptible ripple. Mr. Pigott, chief officer of the 'Malda,' informs me that he has seen Kites help a fallen companion out of the water, a kindly trait one would hardly expect in such a bird.

*TRERON DELALANDII.

General Mathews gave me ten specimens of this lovely Pigeon, of which, owing chiefly to accidents, only one survived to reach the Gardens. The cere and feet are of a beautiful coral-red, contrasting finely with the plumage, and the bill and claws white. These birds walk awkwardly, not unlike a Parrot, on the ground, to which they must very seldom descend, as there appears to be a native superstition that the "Nenge" dies if it touches the ground. They jump, however, with considerable ease, covering about a foot without flapping the wings. Their note is very peculiar: first a series of clicking sounds, then a modulated whistle, ending with a croak or two. I fed them at first chiefly on bananas, but afterwards on boiled potatoes, and the survivor also had a good deal of soaked biscuit and boiled rice, together with various fruits, on the voyage. It seemed very sensitive to cold.

*TURTUR SEMITORQUATUS.

I did not see this bird wild in Zanzibar, but it is common on the mainland opposite Mombasa, together with the next species, and both are used for food. General Mathews gave me a large number of these fine Doves, some of which I hope to be able to acclimatize in St. James's Park. Two eggs were laid by my specimens in Zanzibar. The native name is "*Hua.*"

*TURTUR DAMARENSIS.

I saw this bird in captivity in Zanzibar, where it is a most popular pet with the native Swahilis. Near Mombasa I also saw it wild. Mombasa specimens usually want altogether or barely show the conspicuous black line from the bill to the eye found in Zanzibar specimens. Owing to the kindness of General Mathews, Mr. F. Pordage, and other donors, I have been able to bring a series containing both forms to the Gardens. This bird seems much more active than its near ally, *T. risorius*, and has a peculiarly harsh grating croak, rather than a coo. The legs of some Zanzibar birds are black or extremely dark red. The natives call it "*Tatera.*"

TURTUR AURITUS.

On the voyage out a Turtle-Dove came up in the Bay of Biscay and appeared to alight, and on the way home two or three immature birds appeared in the Red Sea, one at least alighting on the rigging. At Port Said I bought an adult, and a young one was with it.

* CHALCOPELIA AFRA.

This beautiful little Dove was common at Mombasa, and has a very swift flight. The natives sometimes keep it in captivity, and know it and the following species by the common name of "*Puge.*"

* TYMPANISTRIA BICOLOR.

There are at the time of writing three specimens of this Dove in the Zoological Society's Gardens, presented by General Mathews, two grey-breasted and one pure white beneath, presumably of different sexes. More than one person has remarked on the resemblance of the male to a Sandpiper, and it certainly suggests in appearance a shore-bird. Its note seems to be a very weak "coo."

COLUMBA LIVIA.

Kept in a domestic state by the natives, and little modified, except in colour, from the wild form. There are a few "homers" in the possession of Europeans at Mombasa, where European fowls are also to be seen.

* COTURNIX COMMUNIS.

On the voyage home, in the Red Sea, a Quail, much exhausted, attempted to alight on the side of the vessel, but fell into the water and was carried away astern. Numbers were on sale alive at Port Said at 4*d.* each. In the Mediterranean, on September 28th, a Quail came on board and was captured by the carpenter, who gave it to me. I placed it with my Francolins, which did not offer to hurt it, and it is now in the Zoological Gardens.

* FRANCOLINUS GRANTI.

This species is very common on Mombasa Island, judging from the frequency with which one hears its clanking cry at dawn and dusk. The birds, however, cannot be made to rise in the thick bush, so that the Doves on the mainland form the chief local game.

* NUMIDA MITRATA.

This species is very easily rendered tame, the specimens brought home being absolutely impudent. Mr. F. Pordage who had a very beautiful specimen, slighter-looking, though fully adult, than those brought home, told me they were easily tamed by shutting them up and feeding them well for awhile, when they would stay about the bungalow when set at liberty, as his bird did. This species has the native name of "*Kanga*," a tufted species which I saw tame in Zanzibar (probably *N. pucherani*) being distinguished as "*Karoro.*"

* GLAREOLA OCULARIS.

I am indebted to Mr. R. Macalister for two specimens of this interesting bird. I accompanied him on one occasion a few miles up the mainland opposite Mombasa Island to a small lake, or rather bog, for it was filled with vegetation, abounding with grasshoppers and small frogs, and frequented by Ibises (*I. æthiopica* and a taller black species) and white Egrets. The Ibises were too wary to be obtained, but my companion shot two Pratincoles, one, which was mortally wounded, at the lake, and one on our journey back, which was winged. The broken part of the wing having been amputated and the stump dressed with Friar's balsam, the bird's wound healed in a very few days, though after the first day it refused food and I had to feed it for about a week by hand, during which operation it bit with considerable vigour. When turned loose in a small yard its attitude when startled strongly reminded me of a small Gull, which it also resembled in its gait; but it had the bobbing motion of the head characteristic of a Plover. Its flight resembles that of the Golden Plover, but also reminds one, in its slowness, of a Tern, and its cry, though rattling, can yet be recognized as that of a Pluvialine bird.

This bird is now in a large cage in the Insect-house in the Zoological Society's Gardens, and appears to be doing well.

DROMAS ARDEOLA.

I saw two of these curious birds in the shallow water on the shore at Aden, and took them at a distance for Gulls, which they certainly resemble, though the long legs and quicker flight point out at once their Limicoline affinities.

LARUS HEMPRICHI.

Abundant and tame at the southern end of the Red Sea, especially at Aden, where, however, I found them less numerous on the return journey, while the Kites were more so. These Gulls more than once alighted on the ship.

STERCORARIUS POMARINUS.

Numbers of these Skuas appeared when we had passed through the Straits of Gibraltar on October 6th, and we saw them for a day or two. They were at first difficult to distinguish from the Shearwaters (*Puffinus kuhli* ?), being mostly in immature plumage. In their flight, however, they differed much from the sailing Shearwaters, and to a lesser extent from the Gulls, being heavier and more Crow-like on the wing, and this difference was especially apparent when they stooped on food in the water.

PHŒNICOPTERUS ANTIQUORUM.

Seen from the ship in the Suez Canal, in flight this bird is certainly quite Anserine. I was told that a cartful of living birds was on sale at 10 shillings each at Port Said, on the return journey; but though I was ashore at the time and looking out for birds, I was not fortunate enough to meet with these. From the birds I saw I should consider Port Said a very excellent place in which to pick up good living specimens, since one meets with cage-birds there from many different localities.

*** LIMNOCORAX NIGER.**

Four of these beautiful little Gallinules were among the animals put on board the 'Malda' by General Mathews. They were extremely tame in the cage, but seem to have become shy in the Western Aviary. They fed readily on minced raw meat, soaked biscuit, dari, and hemp-seed, and did not attempt to hurt a Spotted Crake which came on board on Wednesday, October 5th, we being then in the Mediterranean. The latter bird, however, was restless, and pined, drooped, and provokingly died just before reaching the Gardens.

XXII.—*On some Genera of Oriental Barbets.*

By W. T. Blanford, F.R.S.

Whilst examining the Indian, Ceylonese, and Burmese Barbets, and preparing an account of them for the third volume of the 'Birds' in the 'Fauna of British India,' I have been led to suggest a slight modification of the generic arrangement adopted by Captain Shelley in the nineteenth volume of the British Museum Catalogue. I quite agree with Captain Shelley's remarks (Cat. Birds B. M. xix. p. 13) as to the great difficulties in the way of generic separation presented by many members of the family, but at the same time I am inclined to rely upon style of coloration to a greater extent than he does.

In the work mentioned the Barbets of the Oriental Region are arranged in the following seven genera:—

Calorhamphus.
Megalæma.
Chotorhea.
Cyanops.
Mesobucco.
Xantholæma.
Psilopogon.

Of these *Calorhamphus* differs widely, both in structure and coloration, from all the others*. The genus *Psilopogon*, though far less distinct than *Calorhamphus*, is readily separated by its greatly graduated tail-feathers. The other five genera contain a number of species, the relations of which have long been a difficulty, and scarcely any two naturalists have adopted the same generic divisions. It is unnecessary to enter at any length into the various arrangements that have been adopted, and it will suffice to notice those employed by a few of the principal writers who have dealt with the family.

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* According to Davison's account of the habits of *C. hayi* ('Stray Feathers,' vi. p. 180), this is by far the most insectivorous of the Oriental Barbets, and resembles some of the African forms of *Melanobucco*, *Trichelæma*, *Trachyphonus*, &c., in respect of food. This is somewhat noteworthy, for *Calorhamphus* has no rictal bristles, whilst in other Oriental genera the gape and chin are beset with long hairs.

In 1849 all the species belonging to the five genera mentioned, so far as they were then known, were included by Mr. G. R. Gray in his genus *Megalaima* (Gen. Birds, ii. p. 429). In 1854 Bonaparte, in the 'Conspectus Volucrum Zygodactylorum,' divided the members of Gray's genus *Megalæma* into two genera, *Bucco* and *Megalæma*, the latter being subdivided into four subgenera, *Megalæma*, *Chotorhea*, *Cyanops*, and *Xantholæma*, the last three terms being then proposed as new. In the 'Monograph of the Capitonidæ' (1871), Messrs. C. H. T. and G. F. L. Marshall reunited four of Bonaparte's genera and subgenera under Gray's generic name *Megalæma* (*Bucco* had been shown to be something very different), *Xantholæma* alone being kept separate. This distinction of *Xantholæma*, of which the type is *X. hæmatocephala*, the common "Coppersmith" of India, has been generally accepted, as both the bill and the wing are different in form from those of the species retained by Messrs. Marshall in *Megalæma*.

But although all the species of Bonaparte's *Bucco*, *Megalæma*, *Chotorhea*, and *Cyanops* were arranged in one genus in the Monograph, that genus in the key (pp. xxvi–xxvii) was divided into three sections, none of which, except the first, corresponded with any of Bonaparte's genera. The first of these sections, distinguished as "Sect. *a*, maxima, dorso olivascenti-brunneo," corresponded to Bonaparte's *Bucco*, and contained only one species, *M. virens* (the Himalayan *Megalæma marshallorum* was subsequently distinguished from typical *M. virens* by Swinhoe); the second section, thus characterized, "*b*, virides, capite versicolori," comprised the *Megalæma*, *Cyanops*, and part of the *Chotorhea* of Bonaparte; whilst the third, with these characters, "*c*, virides, capite brunneo vel albo striato," contained a well-known group of

Barbets, amongst which are *Megalæma zeylonica* (*M. caniceps*), *M. lineata*, and *M. viridis*, which had been assigned to *Chotorhea* by Bonaparte (and by G. R. Gray in his 'Hand-list'), but had been left in *Megalæma* by Horsfield and Moore (Cat. Birds Mus. E.I. Co. pp. 636–640) and by Jerdon ('Birds of India,' i. pp. 309–312), although in both works *Cyanops* and *Chotorhea* were kept distinct from *Megalæma*. At p. xxxix of the Monograph, in the account of the distribution, section *c* is classed as one of the subgenera of *Megalæma*, and the name *Megalæma* is restricted to it.

In the British Museum Catalogue all Bonaparte's genera, except *Bucco*, are recognized, though the species assigned to them differ widely from those in Bonaparte's list. *Megalæma* in the Catalogue corresponds to section *a* of the Monograph, whilst section *c* of that work, and part of section *b*, are referred to *Cyanops*. An additional genus, *Mesobucco*, is proposed for some small species distinguished by their small size and long rictal bristles.

Thus it will be seen that *Megalæma zeylonica* (*M. caniceps*) and its allies, the section *c* of Messrs. Marshall's Monograph, have been referred by various naturalists to every one of the three genera *Megalæma* (restricted), *Cyanops*, and *Chotorhea*, and the first change that I would suggest in the generic classification of Indian Barbets is the separation of this small group of species as a distinct genus with peculiar coloration. It will, however, be best to review the various genera in order. If, in doing so, I appear to attach more importance to coloration than has been usual amongst ornithologists, I can only plead that the colour of feathers has been shown to depend either on the presence or absence of certain pigments, or on the surface-structure*, and in either case is quite as definite a structural character as, for instance, the shape that the feathers assume.

The genus *Megalæma* of the British Museum Catalogue is precisely equivalent to Bonaparte's genus *Bucco* and to *Megalæma*, section *a*, of Messrs. Marshall's Monograph, and it is restricted to two species, *M. virens* and *M. marshallorum*.

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* Gadow, P. Z. S. 1882, p. 400.

A most important character in these birds, and one which I am disposed to regard as of generic importance, is the possession of bright red lower tail-coverts. The bill, too, is pale in colour and peculiarly shaped, high at the base, with the culmen slightly curved, whilst the nostrils are concealed by dense plumes. Now there is a little-known species of Barbet, *M. lagrandieri*, found in Cochin-China, but unfortunately not represented, so far as I know, in any English collection, that agrees with typical *Megalæma* in these characters, and should, I think, be referred to it. This species has been described and figured by Jules Verreaux, and the figure is copied and the description translated in Messrs. Marshall's 'Monograph of the Capitonidæ.'

Nearly allied to *Megalæma*, but distinguished by the want of the bright red under tail-coverts, by the whole head, neck, and breast being brown with paler striæ, by having a somewhat differently shaped bill, lower at the base, and by the nostrils being free from plumes, is the group so often mentioned as section *c* of the Monograph. For this I propose the name *Thereiceryx**, the type being *Bucco zeylonicus*, Gmel. The bill is reddish, brownish, or yellow, not black, and is intermediate in shape between that of *Megalæma* and that of *Cyanops*. With the typical species, *T. zeylonicus*, I unite *Bucco caniceps*, Franklin, and *Megalæma inornata*, Walden, the Ceylon and South-Indian form *zeylonicus* being simply a smaller and darker and more richly coloured variety of the North-Indian *caniceps*. It is a general rule, not confined to birds, that animals from Ceylon and the southern part of the Indian Peninsula are smaller and more deeply coloured than those from Northern India. A good example is afforded by *Eurystomus lætior* (Sharpe, P. Z. S. 1890, p. 551). The other species of *Thereiceryx* besides *T. zeylonicus* are *Capito lineatus*, Vieill. (I agree with Captain Shelley in regarding *Megalæma hodgsoni*, Bp., as identical), *Bucco viridis*, Bodd., and the species from Cochin-China to which the hybrid name of *Megalæma* or *Cyanops phæostriata* is applied in the 'Monograph of the Capitonidæ' and in the British Museum Catalogue. This was originally named *Bucco faiostrictus* by Temminck, Pl. Col. pl. 527 (Barbu grivelé), but in his account of the genus *Bucco*, published at the same time (88^e livraison), the name is printed *faiostriatus*. By Bonaparte (Consp. Gen. Av. i. p. 144) the name was corrected to *phaiostictus* (*phæostictus*), and this spelling is a great improvement, and may, I think, with advantage be adopted, as it was by Goffin and G. R. Gray. *Thereiceryx phæostictus* is by no means a typical member of the genus; both in the shape of the bill and in some details of coloration, especially in having a red spot on each side of the fore neck, it shows a passage to *Cyanops*.

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* "Herald of the hot season": *θέρος*, summer, the hot season; and *κήρυξ*, a herald. The loud notes of these birds are constantly uttered just before and during the hot season.

There remain several species of more gaudily coloured Barbets, the section *b* of the Monograph. These are divided in the British Museum Catalogue between *Chotorhea* and *Cyanops*. I concur in the separation of the two genera. *Chotorhea* is distinguished by having a much longer and very black bill, lower at the base, with the culmen greatly curved. There is, however, one species, *Bucco mystacophanus*, Temm., placed by Shelley in *Cyanops*, which I agree with Horsfield and Moore, Salvadori (Ucc. Born. p. 34), and Oates ('Birds of Burma,' ii. p. 130) in referring to *Chotorhea*. On the other hand, I do not regard the differences exhibited by *Mesobucco* as generic. The type of the genus, *M. duvauceli*, certainly has very long rictal bristles, but they are of less length in *M. cyanotis*, and in a species recently described from Borneo under the name of *M. eximius* by Dr. Bowdler Sharpe (Ibis, 1892, pp. 324, 441, pl. xi.) they are scarcely, if at all, longer than the bill, whilst in typical forms of *Cyanops* they are very little, if at all, shorter. In other details of structure and in plumage the species of *Mesobucco* agree with *Cyanops*, and the only remaining distinction is the smaller size of the former, but this by itself is scarcely of generic importance.

The following is a key to the genera of Oriental Barbets as above defined, and a list of the species :—

A. No green on plumage; no rictal bristles ...... CALORHAMPHUS.
B. Prevailing colour green; long rictal bristles.
  a. Tail square or slightly rounded.
    a'. Lower tail-coverts red .... MEGALÆMA.
    b'. Lower tail-coverts green.
      a². Second primary shorter than tenth.
        a³. Head, neck, and breast brown, with pale longitudinal streaks .... THEREICERYX.
        b³. Head and neck brightly coloured, not streaked.
          a⁴. Culmen longer than tarsus .... CHOTORHEA.
          b⁴. Culmen not longer than tarsus .... CYANOPS.
      b². Second primary longer than eighth .... XANTHOLÆMA.
  b. Tail-feathers much graduated .... PSILOPOGON.

List of Species.

Genus CALORHAMPHUS.

Calorhamphus hayi.
C. fuliginosus.

Genus MEGALÆMA.

Megalæma virens.
M. lagrandieri.
M. marshallorum.

Genus THEREICERYX.

Thereiceryx zeylonicus.
T. viridis.
T. lineatus.
T. phæostictus.

Genus CHOTORHEA.

Chotorhea javensis.
C. corvina.
C. chrysopogon.
C. chrysopsis (? distinct).
C. versicolor.
C. mystacophanes.

Genus CYANOPS.

Cyanops asiatica.
C. davisoni.
C. flavifrons.
C. armillaris.
C. henrici.
C. incognita.
C. pulcherrima.
C. franklini.
C. ramsayi.
C. oorti.
C. monticola.
C. nuchalis.
C. faber.
C. duvauceli.
C. cyanotis.
C. eximia.

Genus XANTHOLÆMA.

Xantholæma hæmatocephala.
X. rubricapilla.
X. australis.
X. malabarica.
X. rosea.
X. intermedia.

Genus PSILOPOGON.

Psilopogon pyrolophus.

XXIII.—*On* Acredula caudata *and its allied Forms.*

By H. E. DRESSER, F.L.S., F.Z.S.

SOME two years ago, when Count Salvadori was in London, I showed him an example of a peculiar form of *Acredula* received from Greece, where it had been obtained on Mount Olympus by Dr. Th. Krüper. Though generally resembling *Acredula rosea*, it differed in several particulars from that bird. Count Salvadori pronounced it to belong, in his opinion, to a perfectly distinct species, and urged me to describe it. This I was loth to do on the faith of a single specimen, and I elected to wait until I could procure more. But I have as yet not succeeded in obtaining another specimen from Greece, where it must consequently be a rare bird. When, last autumn, Count Salvadori again visited England, he urged me to lose no further time in characterizing this bird, and I handed it over to him and proposed that he should describe it. But this he would not do, and I therefore arranged to describe it conjointly with him, which I did at the last meeting of the British Ornithologists' Club in 1892, giving it the name, which Count Salvadori suggested, of *Acredula macedonica*. As only a short diagnosis of this species was published in the Bulletin of the B.O.C., I take this opportunity of giving a fuller description as follows:—

ACREDULA MACEDONICA, Salvad. & Dresser, Bull. B. O. C. iv. p. xv*.

♂ *ad.* Fronte et parte media pilei usque ad occiput albidis; lateribus pilei a rostri basi usque ad cervicem latissime nigris; dorso et corpore supra sicut in *A. rosea*; genis albidis fusco variis; gula albida in medio plaga fusca ornata, et a pectore fascia pectorali transversa nigricante divisa; gastræo reliquo albido, lateribus, abdomine imo, et subcaudalibus roseo indutis; alis et cauda sicut in *A. rosea* coloratis. Long. tot. 5·5 poll., culmin. 0·3, alæ 2·4, caudæ 3·5, tarsi 0·6.

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* See also Dr. Bowdler Sharpe's remarks, Bull. B. O. C. v. p. xxiii.

This new species has the upper parts like *Acredula rosea*, but the black on the sides of the head is much broader and extends to the base of the bill, the lores also being black. The underparts resemble those of *Acredula tephronota* on account of the dark patch on the throat. The type of this species was obtained by Dr. Krüper on Mount Olympus in Macedonia, and is in my own collection.

The number of Long-tailed Titmice inhabiting the Western Palæarctic Region is now increased to six, which are as follows:—

1. ACREDULA CAUDATA (Linn.), which is easily distinguishable from having the sides of the crown and entire head white.

Hab. Northern Europe and Northern Asia.

Of the Long-tailed Titmice which have the sides of the head black, two have the centre of the back black and the sides rose-coloured, viz.:—

2. ACREDULA ROSEA (Blyth), which has the lores and base of the bill white and the underparts white or whitish.

Hab. British Isles, ranging south to Austria and Northern Italy.

3. ACREDULA MACEDONICA, Salvad. & Dresser, as above described, which has the lores black and the underparts as in *Acredula tephronota.*

Hab. Greece.

One other species has the sides of the head black, but differs from nos. 2 and 3 in having the centre of the back grey, viz.:—

4. ACREDULA IRBII, Sharpe & Dresser, which has the underparts as in *A. rosea*, but differs in having the centre of the back grey and not black, and the centre of the crown generally slightly marked with blackish and not pure white.

Hab. Southern Spain, Southern Italy, and Sicily.

5. Acredula tephronota (Günther) resembles *A. irbii*, differing only in having a large blackish patch on the centre of the throat.

Hab. Turkey in Europe, Asia Minor, ranging into Turkestan and Persia.

According to Dr. Radde ('Ornis Caucasica,' p. 144) specimens from Tiflis and the sources of the Schamchor differ from typical *A. tephronota*, and he describes and figures this form under the name of *Acredula tephronota*, var. *major*. I have not been able to procure a specimen of this bird for comparison, and am therefore unable to say whether it can be considered a valid subspecies. There is, however, a Titmouse from Kuban in the Caucasus, viz.:—

6. Acredula caucasica, Lorenz (*Mecistura irbyi*, subsp. *caucasica*, Lorenz, Beitr. orn. Faun. Nord. Kaukasus, p. 60, Nachtrag, 1887), which is specifically distinct. This species, of which I possess one specimen from Kuban, has the back grey, like *A. irbii* and *A. tephronota*, but lacks the blackish patch which the latter has on the throat, though there are a few pale blackish markings on the lower throat. It may, however, be readily distinguished by having the forehead pale brownish and the sides of the crown brown instead of black. It would appear from Dr. Radde's remarks (Orn. Cauc. p. 143) that it is this species to which he refers under the name of *Acredula caudata*.

Hab. The northern slopes of the Caucasus.

I may here remark that Dr. Gadow (Cat. B. Brit. Mus. viii. p. 62) states that the Japanese Long-tailed Titmouse, *A. trivirgata* (Temm.), differs from *Acredula rosea* in having the brownish-black band on the sides of the crown in adult specimens extending over the loral and nasal region; but in the series I have before me this character does not hold good, as in no specimen does the black extend over these parts. The only differences I can detect between *Acredula trivirgata* and *A. rosea* are that the former is smaller than the latter, the wing measuring 2·2, as against 2·35, and that the black band on the side of the crown is rather broader in *A. trivirgata* than in *A. rosea.* But these differences are at best very trifling.

XXIV.—*Notes on* Paramythia montium *and* Amalocichla sclateriana. By The Editor.

(Plate VII.)

Mr. C. W. de Vis, the Curator of the Queensland Museum, Brisbane, has, with the consent of the Trustees of that Institution, most kindly forwarded to me for examination examples of the two remarkable types of the Papuan Avifauna which he has lately described as *Paramythia montium* and *Amalocichla sclateriana.* Of the former of these, which is one of the most remarkable Passerine forms that I have ever seen, I am able to give a figure, and I venture to add a few notes on both of them, which may be acceptable to ornithologists who have not had an opportunity of examining these rare birds.

Mr. de Vis has referred *Paramythia montium*[*] to the Sturnidæ, but I do not think that can be its proper place. So far as I can tell from the examination of the single specimen (in which the wings are not perfect) it has only nine primaries, and the tarsi are long, slender, and smooth, quite different from those of the Starling-group. But when I ask myself *where* is its natural position I am not able to give a satisfactory answer, nor can Dr. Bowdler Sharpe, who at my request has carefully studied the question, assist me much in the matter. There can be no doubt, however, that *Paramythia* is a typical Oscinine bird, with nearly smooth tarsi and very feeble rictal bristles. If, as I believe, it has only nine primaries, it must come into the Fringilliform Oscines of the British Museum Catalogue (vol. x. p. 1). Of this section the Palæogean families there recognized are the Dicæidæ, Ampelidæ, Hirundinidæ, Motacillidæ, and Fringillidæ. *Paramythia* does not fit in well with any of thes groups, and must consequently (until further investigation stand by itself, as representative of a family, Paramythiidæ coming perhaps nearest to the Ampelidæ and some of th Dicæidæ.

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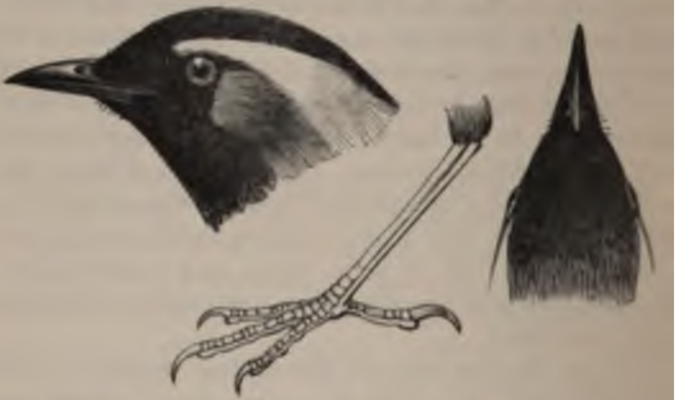
[*] First described in 'Annual Report on British New Guinea' for 1890–1 (Brisbane, 1892), p. 95. See also Ann. Queensland Mus. no. 2, p. 6; and Ibis, 1892, p. 348.

As the works in which *Paramythia* are described are no readily accessible, I reprint Mr. de Vis's accurate descriptio of this remarkable form to accompany the figure.



Bill and foot of *Paramythia montium.*

“Paramythia, de Vis.

“Bill shorter than the head, slightly notched at the tip compressed, acuminate; fore part of upper mandible curvin gently to the tip; culmen obtuse; tomium somewhat inflected. Nostril exposed, elongate-ovate, placed in the basa half of the nasal groove, with a superior membrane. A fe small soft rictal hairs. Wing subacuminate, subelongate the first primary in place as long as the eighth; the third fourth, fifth, and sixth forming the tip of the wing. Tai longer than wing, cuneate. Tarsus moderate, with scutellation entire. A small bare spot behind the eye. Hea crested.

“Paramythia montium, de Vis. (Plate VII.)

“Chin, throat, fore cheek, lore, a narrow superciliary lin and a broad frontal crest extending over crown black; sin

ciput and crown cream-white, the latter slightly tinged with blue; breast, upper abdomen, thigh, hinder cheek, and a broad band across occiput and upper back dull blue; the rest of the upper surface bright olive-green. Lower abdomen, vent, under tail-coverts, and a hypochondrial patch dull golden yellow. Wing above fuscous, the primaries narrowly edged with greenish grey, the rest with olive-green. Tail above brown on the inner, dull blue on the outer webs; the median feathers blue on both webs. Lower surface of wing and tail brown; inner webs of remiges obscurely edged with ashy grey. Under wing-coverts ashy grey with dark brown tips. Bill black; legs and feet blackish brown; iris brown. Total length 190·0 millim.; wing 87·0; tail 110·0; bill (gape) 16·0; tarsus 30·0.

"*Hab.* Musgrave Range, British New Guinea, 7000–8000 feet, July 1891 (*Sir Wm. Macgregor*)."

As regards *Amalocichla sclateriana*, which will be found described in the same paper, I can only say that I think this form rather belongs to the Turdidæ than to the Timeliidæ, as suggested by Mr. de Vis. The wings are short and rounded, it is true, but the bill and feet are those of *Turdus*, and the pale fulvous bar on the under surface of the remiges seems to betray Geocichline affinities. Unfortunately the only individual of this species obtained is not in perfect plumage and is in partial moult.

I subjoin, for facility of reference, Mr. de Vis's description of this rare form:—

"AMALOCICHLA, de Vis.

"Bill Geocichline, but with the nostril small and placed in the anterior end of the nasal groove, and with the under mandible straight as far as the tip, which is slightly deflected; mandibular notch shallow. Rictal bristles moderate. Wing short, rounded, concave; first primary about half its length shorter than the second; second to fifth, which is the longest, graduated. Tail of twelve feathers, rounded, shorter than wing. Tarsus elongate, slender, ocreate. Plumage soft and loose.

"Amalocichla sclateriana, de Vis.

"Above rufous brown; head smoky brown; the feather of the hind head with fuscous margins. Upper and unde tail-coverts rufous; chin and throat white, appearing as a ill-defined gorget; the feathers with narrow paler brow edges, forming obscure transverse bars. Feathers of th upper breast greyish white, with broad smoky-brown margin forming an ill-defined pectoral band. Lower breast, sides c abdomen, and thighs grey; centre of abdomen whit Lores grey mottled with brown; cheeks, ear-coverts, an sides of neck rufous, grading to rufous brown, and edge with fuscous brown. Under wing-coverts and surface c quills ashy brown, the latter with a large buff spot near th base of the inner webs of all but the first three primaries, th spots forming a clearly defined band. Bill black; base o lower mandible and feet horn-brown. Length 195·0 millim. wing 103·0; tail 71·0; tarsus 47·0; gape 24·0.

"*Hab.* Mount Owen Stanley, British New Guinea."

Mr. Seebohm, our great authority on the Turdidæ, doe not seem disposed to admit *Amalocichla* into that family He suggests that it may belong to the Pittidæ, which i possible, though not, I think, likely. This point, howeve can be settled only when specimens are obtained for anatomical examination.

XXV.—*Note on the Proper Use of the Generic Terms* Certhiola *and* Cœreba. By The Editor.

The American ornithologists have recently caused needles confusion by proposing to reject the long-recognized nam *Certhiola* of Sundevall, and to use in its place *Cœreba* c Vieillot, a term always hitherto applied to a different genu This has been done (see Ridgway, 'Manual N. A. B.,' Appendix, p. 590) under the mistaken notion that the type c *Cœreba*, Vieillot (Ois. de l'Amér. Septentr. ii. p. 70), mus necessarily be *Cœreba flaveola*, as being the only specie actually named when the original term was first introduced

But it is obvious on reference to Vieillot's work that the term *Cœreba* was intended as a Latin equivalent for the "Guit-Guit" of Buffon; and the "Guit-Guit" of Buffon was primarily the South-American species usually called *Cœreba cyanea,* as will be seen by reference to the 'Histoire Naturelle' (v. p. 529). Buffon called the Sugar-birds of the West Indies (*Certhiola*) by another name, "Sucrier" (*op. cit.* p. 542). It is therefore quite erroneous to use *Cœreba* for the "Sucriers" instead of the "Guit-Guits."

On reference to Vieillot's 'Analyse' (p. 46), which, although not published until 1816, may surely be used to explain Vieillot's meaning in his former work, it will be observed that the type of the genus *Cœreba* (*op. cit.* p. 46) is given as the "Guit-Guit" of Buffon, and that no other species is named. I maintain, therefore, that the usage (which I followed in the 11th volume of the 'Catalogue of Birds') of employing *Certhiola* for the Sugar-birds of the West Indies and *Cœreba* for the "Blue Creepers" of South America is absolutely correct, and should be followed. And I trust that our friends of the American Ornithologists' Union will reconsider their determination to reject the former name for *Cœreba,* which, as Mr. Ridgway himself expresses it, has been "quite universally employed" by recent authors for a different genus.

Such radical changes should be made only on absolutely certain grounds, and not when there is a legitimate difference of opinion on the subject.

To transfer a name "quite universally employed" from one generic type to another renders it absolutely useless as a designation for the latter.

Even according to the canons of nomenclature adopted by the A. O. U. it may be argued that *Cœreba* of Vieillot includes both the "Guit-Guits" and the "Sucriers," and that Sundevall (K. Vet.-Ak. Handl. 1835, p. 99) had a perfect right to restrict that term to the "Guit-Guits" and give a new appellation (*Certhiola*) to the "Sucriers."

XXVI.—*Bulletin of the British Ornithologists' Club.* Nos. IV.-VI.

No. IV. (Dec. 31st, 1892.)

THE third meeting of the Club was held at the Mona Hotel, Henrietta Street, Covent Garden, on Wednesday, December 21st, 1892.

Chairman : P. L. SCLATER, F.R.S.

Members present :—E. BIDWELL, R. STEPHENSON CLARKE, PHILIP CROWLEY, H. E. DRESSER, H. O. FORBES, W. R. OGILVIE-GRANT, Lt.-Col. H. L. IRBY, ST. GEORGE MIVART, F.R.S., H. J. PEARSON, F. PENROSE, HOWARD SAUNDERS (*Treas.*), W. L. SCLATER, HENRY SEEBOHM, R. BOWDLER SHARPE, Rev. H. H. SLATER, Capt. HORACE TERRY, J. F. TRISTRAM-VALENTINE.

Guests : A. TREVOR-BATTYE, E. HARTERT, E. J. HART.

The TREASURER announced that the number of Members amounted to 78.

Mr. H. E. DRESSER exhibited a specimen of a new species of *Acredula* from Macedonia, which he had received from Dr. Krüper. He proposed to call it

ACREDULA MACEDONICA, sp. n.

A. similis *A. roseæ*, sed nigredine pilei lateralis latiore et usque ad nares productâ, itaque loris nigris et plagâ gutturali sic ut in *A. tephronota*, distinguenda. Long. tot. 5·5 poll., culm. 0·3, alæ 2·4, caudæ 3·5, tarsi 0·6.

Hab. In monte Olympo.

Mr. PHILIP CROWLEY exhibited a nest and egg of *Paradisea raggiana* and the egg of *Chlamydodera cerviniventris* from South-eastern New Guinea; also an egg of *Chlamydodera maculata* from Clarence River, N. S. Wales. That of *C. cerviniventris* had been procured by Mr. Goldie at Milne Bay, S.E. New Guinea. The *Paradisea* was stated to build in shrubs from about 15 to 20 feet in height, and the egg resembled that of *Paradisea apoda* figured by Dr. Meyer from the Aru Islands (Zeitschr. ges. Orn. i. Taf. xvii. fig. 2).

Mr. A. Trevor-Battye exhibited some skins of *Parus borealis* and *P. palustris* from Sweden, and made some remarks on the different habits and notes of the two species as observed by him in that country. Remarks on this subject were made by Mr. Howard Saunders, Rev. H. H. Slater, Mr. Ernst Hartert, and Mr. H. J. Pearson.

The Hon. Walter Rothschild sent for exhibition the type of the remarkable new genus, *Palmeria mirabilis*, from Mauai, Sandwich Islands, as well as the types of *Loxops ochracea* and *Hemignathus affinis*, the descriptions of which would appear in 'The Ibis' for January 1893.

Mr. Ernst Hartert exhibited an example of a new *Conurus* obtained by him on the island of Aruba, which he proposed to call

Conurus arubensis, sp. n.

Conurus C. æruginoso simillimus, sed fronte pallidiore, loris, capitis lateribus et gula lætioribus et conspicue luteo vel aureo tinctis distinguendus. Al. 5·4 poll., caud. 5.

This new form might be called intermediate between *C. pertinax* and *C. æruginosus*. Mr. Hartert had obtained four skins, which he had compared with a good many skins of both *C. æruginosus* and *C. pertinax* in Mus. H. v. Berlepsch, the British Museum, and the Rothschild Museum.

Hab. Aruba, West Indies.

Dr. P. L. Sclater exhibited a specimen of an extraordinary bird from South-eastern New Guinea, *Paramythia montium*, De Vis (Ann. Queensl. Mus. No. 2, p. 6). This species had been discovered by Sir William Macgregor on Mount Suckling, and placed by Mr. de Vis in the family *Sturnidæ*; but it was doubtful whether its affinities lay with the Starlings.

The Hon. Walter Rothschild sent for exhibition a typical specimen of a new Duck, which he proposed to call

ANAS LAYSANENSIS, sp. n.

Bill blackish; top of the head and hind neck deep blackish brown; sides of the head more mottled with brown; round the eye a white ring; interscapular region, scapulars, and wing-coverts light rusty brown, boldly variegated with blackish; feathers of the back and rump blackish, edged with rufous brown and with more or less conspicuous pale shaft-lines; upper tail-coverts and rectrices light brown, barred with blackish; primaries pale brown, with very light edges; chin whitish; feathers of the rest of the lower parts light rusty brown, irregularly barred and spotted with darker brown; feet yellow. In the male there is a conspicuous deep green and black speculum, bordered with white below; in the female the speculum is only indicated, the primary-coverts being edged with white. Total length 15 to 17 inches, wing 7·5 to 7·7, tail 3·5, culmen 1·6, tarsus 1·9.

Hab. Island of Laysan, North Pacific.

Mr. HENRY SEEBOHM exhibited two examples (♂ and ♀) of a *Crossoptilon* which he regarded as representing an undescribed species. He proposed to call it

CROSSOPTILON LEUCURUM.

C. similis *C. tibetano*, sed rectricibus albis nigro terminatis (♂) aut marginatis (♀) distinguendum.

These examples had been obtained by Captain Bower and Dr. Thorold in Eastern Tibet between the Sok Pass and Chiamdo. Similar specimens had been obtained by Prince Henry of Orleans and Monsieur Bonvalot on the plateau between the Sok Pass and Lhassa. Still further to the south, 150 miles east of Lhassa, was found *C. harmani*, of which a drawing was exhibited. East of Chiamdo and Batang, examples of *C. tibetanum* had been found by the Abbé David in Moupin, and by Mr. Pratt at Ta-chien-loo, and examples from both localities were exhibited. The range of this species seemed to overlap that of *C. leucurum* in East Tibet, but the latter was not known to extend into Western China. Examples of *C. auritum* collected by General Prjevalski on the plateau east of Koko-Nor, and the type of

C. manchuricum obtained by the Abbé David on the plateau west of Pekin, were laid on the table for comparison.

Dr. Bowdler Sharpe exhibited a specimen of an apparently new species of *Rhipidura* from the island of Dammar, in the Banda Sea, where it had been procured by Dr. Bassett Smith during the recent voyage of H.M.S. 'Penguin':—

Rhipidura buettikoferi, sp. n.

R. similis *R. setosæ*, sed ubique saturatior, nigricanti-brunnea, nec grisea, et rectricibus duabus exterioribus longiùs albo terminatis. Long. tot. 6·8 poll., culm. 0·7, alæ 3·4, caudæ 3·4, tarsi 0·65.

According to the describer's arrangement in the 'Catalogue of Birds,' the species would fall in the "Key" to the species of *Rhipidura* (vol. iv. pp. 303–308) close to *R. setosa* (*l. c.* p. 329); but it differed from the latter in being blackish brown instead of ashy grey, and the white on the tail was much more extended. Under Count Salvadori's arrangement (Orn. Papuasia, ii. p. 53) of the genus *Rhipidura*, the Dammar species would also be closely allied to *R. setosa*. According, however, to the most recent disposition of the genus by Mr. Büttikofer (Notes Leyden Mus. xv. pp. 65–98), the new species would come into a different section from *R. setosa*, because the upper surface could never be considered to be "pure ashy grey;" on the contrary, the colour of the upper parts was dark chocolate-brown, almost blackish. Thus, to follow Mr. Büttikofer, the species would come next to *R. isura*; but here again, as in the case of *R. setosa*, the dark brown colour—instead of grey—would at once separate it. Dr. Sharpe added that Count Salvadori agreed with him that the species was new to science, and he wished to apologize to Mr. Büttikofer for not having shown him the specimen during his recent visit to London, as, though it had been specially put aside for his examination, it had been mislaid.

Dr. Bowdler Sharpe also exhibited the types of the species of Hainan birds described by Mr. Styan at the first Meeting of the Club on October 19th, 1892, which had been forwarded by him for examination. Mr. Styan had already discovered that his *Cryptolopha bicolor* was not a *Cryptolopha*, but was *Herpornis tyrannulus* of Swinhoe. Of the other species Dr. Sharpe found that *Pinarocichla schmackeri*, Styan, was *Criniger pallidus* of Swinhoe ('Ibis,' 1870, p. 252; *cf.* Sharpe, Cat. B. vi. p. 81). The *Crypsirhina nigra* was a *Temnurus*, a form which had remained unique in the Paris Museum since 1825. The original species, *Temnurus truncatus*, was said to have come from Cochin China, but had never been met with since. It was, however, extremely probable that the genus *Temnurus* would be found both in Cochin China and Hainan, for Mr. Schmacker's collection conclusively proved (if, indeed, any further proof were necessary after Swinhoe's researches) that Hainan formed an integral part of the Indo-Chinese Region; such species as *Harpactes erythrocephalus*, *Ianthœnas puniceus*, and *Siphia pallidipes*, which were true Himalayan forms, proclaiming Hainan to be connected with the Himalayan subregion. Whether *Temnurus niger* would prove to be conspecific with *Temnurus truncatus* could only be determined by a comparison of it with the types in Paris.

Dr. Sharpe next made some remarks on a remarkable paper recently published by Dr. Hartlaub, entitled "Vier seltene Rallen" (Abhandl. nat. Ver. Bremen, xii. Heft 3, pp. 389–402). In this paper Dr. Hartlaub had discussed *Rallus monasa* of Kittlitz from Kuschai, and proposed the generic name of *Kittlitzia* for the bird. Dr. Sharpe pointed out that this generic name had already been employed by Mr. Hartert for the Starling of Kuschai, which Kittlitz called *Calornis corvina* (*cf.* Hartert, 'Kat. Vogelsamml. Senckenb. Mus.' p. 75). He proposed, therefore, to change the name of *Kittlitzia*, Hartlaub (*nec* Hartert), to *Aphanolimnas*, the characters being the same as those so fully set forth by Dr. Hartlaub in his paper.

Of the second species mentioned by Dr. Hartlaub, *Pennula ecaudata* (King), a specimen was placed upon the table from the collection of the Hon. Walter Rothschild, who had kindly lent it for the occasion. In his paper Dr. Hartlaub had mentioned that there were five specimens extant of this rare and probably extinct species, four of which were in Honolulu, and one in the Cambridge Museum. Mr. Rothschild had stated, in a memorandum, that, so far as he was aware, only one specimen remained in Honolulu, and that of the other four, one was in Cambridge, one in Mexico, and the remaining two in his own Museum at Tring. Dr. Sharpe suggested that Dr. Hartlaub's third species of Rail, ***Rallus sandwichensis***, Gm.,—which was evidently a ***Pennula***, and should be called ***Pennula sandwichensis*** (Gm.)—was really the same as ***Pennula ecaudata*** (King). The fourth species—which Dr. Hartlaub had also included in the genus ***Pennula***—was the ***Porzanula palmeri*** of Frohawk, a specimen of which had been also lent for exhibition by Mr. Rothschild. Dr. Sharpe differed from Dr. Hartlaub as to the location of this species in the genus *Pennula,* and contended that it must be retained in the genus *Porzanula,* as it was much nearer to true *Porzana* than to any of the other Ralline genera, but possessed characters of sufficient generic value to warrant its separation.

Mr. H. O. Forbes stated that he had recently received from his correspondent Mr. Hawkins a specimen of *Cabalus modestus* of Hutton, from the island of Mangare in the Chatham group. The specimen was evidently that of a young bird, and Mr. Forbes had no doubt that *Cabalus modestus* was only the young of *Cabalus dieffenbachi.*

Dr. Bowdler Sharpe announced that he had intended to speak about the classification and distribution of the Rails, but, owing to the lateness of the hour, this communication was postponed till the meeting in January.

Mr. H. O. Forbes exhibited the osteological remains of several of the species of birds he had discovered in the Chatham Islands, lying 500 miles to the east of Banks Peninsula, New Zealand. He pointed out that the species he had ('Nature,' xlvi. p. 252) assigned to the genus *Aphanapteryx,* and named *A. hawkinsi* (after his correspondent who had brought him the first fragments of its cranium), he was now inclined to place in a new genus, which he proposed (at the suggestion of Prof. A. Newton, F.R.S.) to call *Diaphorapteryx* (*διάφορος* = different). *Diaphorapteryx hawkinsi* belonged to the Ocydromine group of the Rallidæ, and was nearly related not only to *Ocydromus* itself, but even more closely to *Aphanapteryx* of Mauritius. It appeared, indeed, to be nearer to *Aphanapteryx* than the latter genus was to *Erythromachus* of Rodriguez.

Erythromachus differed from *Diaphorapteryx* and *Aphanapteryx* in the greater length of its nasal aperture, which was less than one third of the length of the beak in *Diaphorapteryx*. The latter also differed from both these genera and from *Ocydromus* in the large protuberances on the basi-temporal region of the skull; and from *Ocydromus* in its widely separated palatine bones, which, as they did not meet posteriorly in the middle line, disclosed the whole of the post-vomerine parasphenoidal rostrum as seen from the palatal surface. It had a strong, thick, short tarso-metatarsus, shorter than the metatarsus as figured by M. Milne-Edwards in his 'Oiseaux Fossiles de France.' The beak was highly arched—as in *Aphanapteryx* and *Erythromachus*,—and was longer than the tarso-metatarsus.

Palæocorax moriorum.—This species of the Corvidæ, established on the wing- and limb-bones, had been originally placed in the genus *Corvus* (*cf.* 'Nature,' xlvi. p. 252), as these bones presented no characters distinguishing them from those of the most typical Crow. The cranium, however, differed from that of every known species of that genus, so that Mr. Forbes had found it necessary to establish a new genus, *Palæocorax*, for its reception.

There were present minute rudiments of the basipterygoid processes on the parasphenoid. The vomer was broad, flat, three-pointed in front. The maxillaries were anchylosed to the premaxillaries; the latter were anchylosed to the expanded ossified base of the nasal septum. The ossified mesethmoid stretched backward and was lodged in the concavity of the upper surface of the vomer, so that it presented a form intermediate between the complete ægithognathous Coracomorphæ, such as *Corvus*, and the compound ægithognathous forms, such as *Gymnorhina*, in which desmognathism was superadded by "anchylosis of the inner edge of the maxillaries with a highly ossified alinasal wall and nasal septum" (*Parker*).

No. V. (Jan. 26th, 1893.)

THE fourth meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 18th of January, 1893.

Chairman: P. L. SCLATER, F.R.S.

Members present:—E. BIDWELL, R. STEPHENSON CLARKE, W. R. OGILVIE-GRANT, Col. L. HOWARD IRBY, H. J. PEARSON, F. PENROSE, EVELYN RAWSON, W. L. SCLATER, HOWARD SAUNDERS (*Treas.*), R. BOWDLER SHARPE, H. SEEBOHM, J. YOUNG.

Guest: C. E. BAKER.

The TREASURER reported that the number of Members amounted to 79.

A letter was read from Count SALVADORI commenting on some of the communications made to the last meeting of the Club, and expressing an opinion that *Cabalus modestus* of Hutton would be found to be distinct from *C. dieffenbachi*.

The EDITOR expressed his regret that, by an oversight, the name of Count Salvadori had not been attached to the description of *Acredula macedonica* in the last number of the 'Bulletin.' He accepted the responsibility and apologized for this omission, which was caused by a misunderstanding on his part, and stated that the species should be called *Acredula macedonica* of Salvadori and Dresser.

Mr. HOWARD SAUNDERS exhibited a mature male Scoter (*Œdemia nigra*), shot by Mr. Chas. Fowler, of Chichester, in August 1891. Mr. Fowler stated that he had seen the two old birds, off and on, all the summer, without thinking of the probability of their breeding; but that early in August he had come upon them with a brood of seven nestlings just able to fly a short distance, and had shot the drake (see Zool. 1892, pp. 151, 228). On making inquiries he was told that the Scoter nested in Earnsley Marshes every year.

Mr. SCLATER exhibited a prepared wing and tail of the Martineta Tinamou (*Calodromas elegans*), and pointed out that this form of the Tinamidæ had 12 rectrices, although these feathers could not be discriminated from the adjacent coverts without careful examination.

There were 10 metacarpo-digitals and 15 cubitals in the wing. The fifth cubital remex was present and well developed, as in all the Tinami (see 'Ibis,' 1890, p. 82). There were 3 feathers on the pollex (*alula spuria*).

Mr. SCLATER read an extract from a letter addressed to him by Dr. G. Hartlaub, in which Dr. Hartlaub pointed out that Dr. Bowdler Sharpe was in error in suggesting (Bull. B. O. C. iv. p. xx) that *Pennula ecaudata* (King) and *P. sandwichensis* (Gm.) were identical. Dr. Hartlaub had compared the Cambridge specimen of the former with the Leyden specimen of the latter, and had found them distinct. The notæum of *P. sandwichensis* was marked by great blackish spots, whereas in *P. ecaudata* the upper parts were of a uniform brown. It was possible that Latham's "Dusky Rail" might belong to *P. sandwichensis* and not to *P. ecaudata*.

A communication was read from the Hon. WALTER ROTHSCHILD containing the description of a new species of *Hemignathus* from the island of Lanai in the Sandwich group. He proposed for it the name of

HEMIGNATHUS LANAIENSIS, sp. n.

H. similis *H. obscuro*, sed rostro valdè longiore et crassiore, pileo cinerascente, notæo sordidiore olivascenti-viridi, pectore sordidè flavo, hypochondriis sordidè olivascentibus, et subcaudalibus albicantibus, distinguendus. Long. alæ 3·1–3·3 poll., culm. 2·9–3·1.

Hab. in insulâ Sandwichensi 'Lanai' dictâ.

Mr. Rothschild's communication contained the following remarks on this new bird:—

"This species belongs to the typical section of *Hemignathus*, which, in my opinion, includes two different species from the island of Kauai, one from Hawai, and one from Oahu, in addition to the new species. They all have the upper and lower mandible of about the same length, while the aberrant *Heterorhynchus*-section, which now contains four species, has the upper mandible nearly twice the length of the lower.

"The *male* differs from the same sex of *H. obscurus* (its nearest ally) from Hawai in its much longer and very stout bill, ashy-greyish tint of the crown, and much duller olivaceous green of the back, neck, and rump. Breast dirty yellow, gradually passing into dull olive on the flanks, instead of bright yellowish olive as in *H. obscurus*. Under tail-coverts creamy white, instead of olive-green.

"*Female*. Everywhere dull greyish olive, becoming more yellowish on the abdomen and under tail-coverts. Throat and cheeks dull greyish.

"*Young male*. Similar to the adult male, but all the colours strongly suffused with an ochraceous tinge.

"Iris dark brown; bill blackish brown, greyish at the base; feet and legs bright slaty blue, soles of the feet yellowish. Wing 3·1 to 3·3 inches, culmen 2·9 to 3·1 (much longer than that of *H. obscurus*)."

Mr. HENRY SEEBOHM exhibited two males, a female, and a young male in first plumage of a new species of *Merula*, which he proposed to call

MERULA WHITEHEADI, sp. n.

Supra brunnea, capite canescente, abdomine castaneo, ventre medio albo, subcaudalibus albo striatis.

The specimens had been procured near Tozari in East Java, 7000 feet above sea-level, in August and September 1886, by Mr. John Whitehead.

Mr. Seebohm also made some critical remarks on a recent paper by Mr. Büttikofer on the same group of Thrushes (Notes Leyd. Mus. xv. p. 109), and exhibited the type specimen of *Merula papuensis* of De Vis, which had been lent to him by the describer for illustration in his forthcoming 'Monograph of the Turdidæ.'

Mr. Seebohm next exhibited and made remarks upon a specimen of a new species of *Zosterops* from East Java, procured by Mr. John Whitehead in 1886. This species he proposed to call

ZOSTEROPS NEGLECTA, sp. n.

Similis *Z. palpebrosæ*, sed magis olivascens, et macula anteoculari obscuriore distinguenda.

This made the sixth species of *Zosterops* found in the island of Java.

Dr. Bowdler Sharpe read a paper on the Classification of the *Rallidæ*. He pointed out that the popular division of the family into Rails, Gallinules, and Coots was an untenable one, the Coots alone having definite characters for their separation as a subfamily, and that even these characters were approached by those of the Gallinules. It seemed, therefore, best to keep the whole of the Rails together as a family, and not to recognize minor divisions such as those specified. The gradual transition from typical Rails to Crakes (e. g. *Eulabeornis—Rallina*), and from Crakes to Gallinules (*Limnobænus* and *Amaurornis* to *Gallinula*), was so marked that it was impossible to say where the Rails ended and the Crakes began, or where the Crakes ended and the Gallinules began.

According to Dr. Sharpe's views, the Rails were an ancient group of birds, which were once more numerously distributed, especially in the southern hemisphere. Many of the surviving representatives of the family, from their isolation and restricted habitats, had become modified in structure, and a much larger number of generic forms existed than had hitherto been supposed.

The following were the genera which Dr. Sharpe proposed to recognize:—1. *Rallus,* L.; 2. *Limnopardalus,* Cab.; 3. *Hypotænidia,* Reichenb.; 4. *Cabalus,* Hutton; 5. *Eulabeornis,* Gould; 6. *Tricholimnas,* gen. n.; 7. *Gymnocrex,* Salvad.; 8. *Aramides,* Pucher.; 9. *Megacrex,* Salvad.; 10. *Habroptila,* Gray; 11. *Ocydromus,* Wagl.; 12. *Aphanapteryx,* Frauenf.; 13. *Diaphorapteryx,* Forbes; 14. *Erythromachus,* Milne-Edwards; 15. *Himantornis,* Schl.; 16. *Dryolimnas,* gen. n.; 17. *Canirallus,* Hartl.; 18. *Rallina,* Reichenb.; 19. *Castanolimnas,* gen. n.; 20. *Crecopsis,* gen. n.; 21. *Crex,* Bechst.; 22. *Œnolimnas,* gen. n.; 23. *Amaurolimnas,* gen. n.; 24. *Anurolimnas,* gen. n.; 25. *Zapornia,* Leach; 26. *Porzana,* Vieill.; 27. *Pennula,* Dole; 28. *Aphanolimnas,* Sharpe; 29. *Corethrura,* Reichenb.; 30. *Rallicula,* Schl.; 31. *Thyrorhina,* Scl. & Salv.; 32. *Ortygops,* Heine; 33. *Poliolimnas,* gen. n.; 34. *Porzanula,* Frohawk; 35. *Creciscus,* Cab.; 36. *Limnocorax,* Swains.; 37. *Limnobænus,* Sund.; 38. *Amaurornis,* Reichenb.; 39. *Rougetius,* Bp.; 40. *Neocrex,* Scl. & Salv.; 41. *Tribonyx,* Du Bus; 42. *Microtribonyx,* gen. n.; 43. *Pareudiastes,* Hartl. & Finsch; 44. *Porphyriornis,* Allen; 45. *Gallinula,* Briss.; 46. *Porphyriops,* Pucher.; 47. *Gallicrex,* Blyth; 48. *Psammocrex,* Oust.; 49. *Ionornis,* Reichenb.; 50. *Porphyrio,* Briss.; 51. *Notornis,* Mantell; 52. *Fulica,* Briss.; 53. *Leguatia,* Schl. Besides these genera there were a few fossil forms, the exact position of which it was difficult to decide upon.

Dr. Sharpe stated that he had lately examined the type specimen of *Gallirallus brachypterus,* from the Caen Museum. For the loan of the specimen he was indebted to Professor Joyeux-Laffine, the Director of that Museum. Dr. Sharpe pointed out that the species had been the subject of much controversial opinion, but was evidently the same as *Gallirallus fuscus* of Du Bus, which must therefore be known as *Ocydromus brachypterus* (Lafr.). The species identified by Sir Walter Buller as *O. brachypterus,* and figured as such in his 'Birds of New Zealand,' had in consequence been wrongly determined.

The following were the characters of the new genera proprosed by Dr. Sharpe:—

Tricholimnas, gen. n. Simile generi "*Eulabeornis*" dicto, sed tectricibus alarum maximè elongatis, remiges ipsos celantibus, distinguendum.

Typus *T. lafresnayanus* (Verr.).

Dryolimnas, gen. n. Simile generi "*Canirallus*" dicto et culmine longiore quam digitus internus cum ungue, sed naribus longitudinalibus angustissimis, aperturâ nasali vix evidente, distinguendum.

Typus *D. cuvieri* (Pucher.).

Castanolimnas, gen. n. Simile generi "*Rallina*" dicto, sed secundariis primariisque æqualibus, et tectricibus alarum elongatis, remigibus albo fasciatis, et rectricibus mollibus decompositis, distinguendum.

Typus *C. canningi* (Blyth).

Crecopsis, gen. n. Simile præcedenti, sed dorso variegato, remigibus concoloribus, et remigibus rectricibusque normalibus distinguendum.

Typus *C. egregia* (Peters).

Œnolimnas, gen. n. Simile generi "*Crex*" dicto, sed ptilosi concolori haud variegatâ, et rectricibus latissimis, ad apicem decompositis distinguendum.

Typus *Œ. isabellinus* (Schl.).

Amaurolimnas, gen. n. Simile generi "*Crex*" dicto, sed rostro longiore, culmine digito interno æquali, distinguendum.

Typus *A. concolor* (Gosse).

Anurolimnas, gen. n., digito medio cum ungue longiore quam culmen, rectricibus haud evidentibus, mollibus, decompositis, a tectricibus caudalibus celatis, distinguendum.

Typus *A. castaneiceps* (Scl. & Salv.).

Poliolimnas, gen. n. Simile generi "*Porzana*" dicto, sed secundariis primariisque æqualibus, alis pedibusque fortibus, illis tarso et digitis æquantibus, distinguendum.

Typus *P. cinereus* (V.).

MICROTRIBONYX, gen. n. Simile generi "*Tribonyx*" dicto, sed alis robustis, primariis quam cubitales longioribus, distinguendum.

Typus *M. ventralis* (Gould).

By permission of the Hon. WALTER ROTHSCHILD, Dr. SHARPE was enabled to lay on the table some specimens of *Ocydromi* belonging to the Rothschild Museum. These were from the Buller collection, and were supposed to illustrate the species of *Ocydromus* recognized by Sir Walter Buller in his second edition of the 'Birds of New Zealand'; but Dr. Sharpe found it very difficult to follow the author in his conclusions, and infinitely preferred the more simple view as to the number of species which had been adopted in the *first* edition of the 'Birds of New Zealand.'

In the second edition Sir Walter Buller, after discussing at some length the number of species, which had been debated between Professor Hutton and himself, had come to the conclusion that five should be recognized, viz.:—*O. greyi*, sp. nov.; *O. fuscus* (Du Bus); *O. earli*, Gray; *O. australis* (Sparrman); and *O. brachypterus* (Lafr.). The plates in Sir Walter Buller's work did not help much towards the identification of the species; for although in nearly every case the actual specimens figured were now in the Rothschild collection, it was almost impossible to recognize them in the chromo-lithographic plates themselves. The question was further complicated by the misleading way in which the species were arranged in the book referred to. Thus, between *O. greyi* and *O. earli* (the latter not being even figured) was interposed *O. fuscus*, the most distinct of all the Weka Rails; so that the idea was conveyed that *O. greyi* of Buller and *O. earli* of Gray were widely different species, whereas Dr. Sharpe stated that, in his opinion, they were not distinguishable. Sir Walter Buller wished to restrict the true *O. earli* to the South Island, because it seemed to be identical with some specimens procured by Mr. Reischek in the latter island. As a matter of fact, however, the type-specimen of *O. earli* was a young bird; and even if there were two species inhabiting the North and South Islands respectively, Dr. Sharpe maintained that it would be perfectly impossible to say to which of these species the young birds belonged. After comparing two of Mr. Reischek's South-Island specimens in the Rothschild collection, supposed by Sir Walter Buller to be the true *O. earli*, with the series of so-called *O. greyi* from the North Island, Dr. Sharpe admitted his inability to separate them even as races. With regard to *O. australis* the question of races was much more difficult, and at first sight it would appear that two well-defined forms could be distinguished—one a sandy-tinted bird, and the other a cinnamon-tinted one. Between these two, however, there appeared to be every possible link and gradation of colour; so that it was impossible to define any races or subspecies. Sir Walter Buller, in his second edition, had indeed hinted that altitude and locality had something to do with the variations in plumage; but the want of labels and definite localities in the specimens of the Buller collection prevented Dr. Sharpe from drawing any satisfactory conclusion.

While speaking of the genus *Ocydromus*, Dr. Sharpe remarked that the so-called *Ocydromus sylvestris*, Sclater, from Lord Howe Island, was not an *Ocydromus* in his opinion, but a *Cabalus*, congeneric with *Cabalus dieffenbachi* from the Chatham Islands, and should therefore be called *Cabalus sylvestris*.

Mr. SEEBOHM made remarks on the Geographical Distribution of British Birds, recognizing 401 species and 13 subspecies as having more or less claim to be admitted to the list.

No. VI. (March 1st, 1893.)

THE fifth meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 15th of February, 1893.

Chairman: P. L. Sclater, F.R.S.

Members present:—E. Bidwell, H. E. Dresser, H. O. Forbes, W. R. Ogilvie-Grant, Col. L. Howard Irby, Dr. St. George Mivart, F.R.S., E. Neale, H. J. Pearson, F. Penrose, Capt. Savile Reid, Howard Saunders (*Treas.*), R. Bowdler Sharpe, Henry Seebohm, J. T. Tristram-Valentine.

Guests: C. Fletcher, Ernst Hartert, Charles Hose.

Mr. H. E. Dresser exhibited on behalf of Mr. John Whitehead a specimen of a *Cryptolopha* from the island of Palawan, which Dr. Sharpe had identified as *Cryptolopha montis* (*cf.* 'Ibis,' 1888, p. 199). Mr. Whitehead, however, had proposed to separate it from the Kina-Balu species, on account of its yellow rump, and to call it

Cryptolopha xanthopygia, sp. n.

Similis *C. montis*, sed rostro crassiore et uropygio sulphureo distinguenda.

Hab. in montibus insulæ Palawanensis.

Mr. Seebohm exhibited an egg supposed to be that of the Knot (*Tringa canutus*) taken near Disco in Greenland.

A communication was read from Mr. Osbert Salvin, F.R.S., on two new species of birds from Nicaragua, as follows:—

"In a collection of birds recently sent by Mr. W. B. Richardson from Nicaragua, several interesting species are represented which, so far as I know, have not hitherto been noticed in Nicaragua. Thus we find *Thryophilus costaricensis*, the Costa-Rican form of *T. castaneus*, as well as *T. thoracicus* and *Thryothorus atrigularis*, both of which, however, have been noticed at Greytown. Skins of a *Cyphorhinus* from Santo Domingo, in Chontales, differ from *C. lawrencii* and may be described as

"Cyphorhinus richardsoni, sp. n.

"♂ *C. lawrencii* affinis, sed supra pallidior, et loris, sicut gula, distincte castaneis, necnon tectricibus alarum minoribus vix transfasciatis, distinguendus.

"Mr. Richardson also sends a specimen of *Piprites griseiceps* from San Carlos, which is only the second we have seen; and, along with several interesting Formicariidæ, an example of a new *Rhopoterpe*, a genus not yet included in the Central-American fauna. This we propose to call

"RHOPOTERPE STICTOPTERA, sp. n.

"♂ *R. torquatæ* affinis et ejusdem staturæ, necnon coloribus plerumque similis; sed capite summo obscuriore, uropygio et cauda fuscescentioribus, remigibus in pogonio externo ad apicem cervino distincte notatis, maculis celatis in pogonio interno cervinis (nec albis), et tectricibus majoribus late cervino terminatis distinguendus.

"*Hab.* Nicaragua; Santo Domingo.

"We also find in Mr. Richardson's collection a single specimen of *Conurus finschi*, originally described from Panama specimens; and a pair, taken at Leon, of the pretty little *Gampsonyx swainsoni*, a well-known bird in South America, but quite new to the Central-American fauna."

A second communication from Mr. SALVIN related to a new species of Petrel.

In the collection of birds made by Mr. Hawkins on the Chatham Islands were two specimens of an *Œstrelata* belonging to a species allied to *Œ. cooki*, but which differed in several marked characters. The skins were not quite adult, but were marked male and female; the birds had been shot on the south-east island on the 8th of May, 1892. Mr. Salvin proposed to describe the species as follows:—

ŒSTRELATA AXILLARIS, sp. n.

Œ. cooki affinis, sed minor; rostro breviore et magis robusto; supra pallidior, tectricibus alarum mediis cinerascentibus albo limbatis, rectricibus lateralibus magis cinereis; axillaribus et tectricibus subalaribus secundariis nigris: rostro nigro, pedibus carneis, digitis et palamis plerumque nigris ad basin carneis. Long. tota circa 12·0 poll., alæ 8·3, caudæ rectr. med. 3·8, rectr. lat. 3·2, rostri a rictu 1·3, tarsi 1·2, dig. med. cum ungue 1·5.

Hab. Chatham Island.

Mr. E. Hartert exhibited the type-specimens of *Hemignathus lanaiensis*, Rothschild, from Lanai, described at the last Meeting of the Club, as well as examples of its nearest allies.

Mr. Hartert also exhibited the skin of a Goose, supposed by him to be a hybrid between *Bernicla brenta* and *Anser albifrons*.

Mr. Henry Seebohm gave a short explanation of a theory propounded by Dr. Nicholski, of St. Petersburg, to account for the variations in the shape of birds' eggs.

Mr. W. R. Ogilvie-Grant made some remarks on the classification of the Game-Birds and on the changes of the plumage in the *Tetraonidæ*.

Mr. Sclater drew attention to the protected district round Aden as being very convenient for an ornithological excursion, and a place where it was evident, from Lieut. Barnes's recent article in 'The Ibis,' that much more good work remained to be done.

XXVII.—*Notices of recent Ornithological Publications.*

[Continued from p. 150.]

48. *Büttikofer on the Species of* Rhipidura.

[A Review of the Genus *Rhipidura*, with an Enumeration of the Specimens in the Leyden Museum. By J. Büttikofer. Notes Leyden Mus. xv. p. 65.]

Mr. Büttikofer gives a complete list, with diagnoses, of the species of this numerous Oriental genus of Muscicapidæ, and excellent critical notes on those of which he has examined specimens. He includes *Leucocerca*, *Neomyias*, and *Sauloprocta* in the genus *Rhipidura*, and recognizes 78 species, of which 5 are now described as new, namely, *R. celebensis* and *R. teysmanni*, from Celebes; *R. sumbavensis*, from Sumbava; *R. rosenbergi*, from Aru; and *R. hoedti*, from Lettie, Timor group.

49. *Cory's 'Catalogue of West-Indian Birds.'*

[Catalogue of West-Indian Birds, containing a List of all Species known to occur in the Bahama Islands, the Greater Antilles, the Caymans, and the Lesser Antilles, excepting the Islands of Tobago and Trinidad. By Charles B. Cory. 4to. Boston: 1892.]

Mr. Cory's new 'Catalogue of West-Indian Birds' is another valuable contribution to our knowledge of the avifauna of the Antillean Subregion, which the author has long made a subject of successful study. In his preface Mr. Cory divides the West Indies into three groups—the Bahamas, the Greater Antilles, and the Lesser Antilles. To the first category are attributed 33 component islands, to the second 17, and to the third 33, making altogether 83 islands, which have been more or less critically examined by Mr. Cory and his collectors—operations which have resulted in a splendid series of from 14,000 to 15,000 specimens of birds.

Mr. Cory commences with a "table of genera and species peculiar to the West Indies," and a complete list of ornithological publications on the subject, arranged first geographically and then chronologically. The former of these enables one to see at a glance what work has been done in the case of each individual island, and will be very useful to future investigators. The systematic catalogue of the birds, which follows, is arranged according to the fashion of the American Code. It enumerates 585 species and subspecies, of which 293 are peculiar to the Antillean Subregion, as shown in the annexed Table (p. 267).

There are 38 genera of birds restricted to the West Indies, of which 1 is peculiar to the Bahamas, 24 to the Greater Antilles, and 8 to the Lesser Antilles.

After the general list are given a very useful list of species and subspecies restricted to the different islands, and an Appendix, which contains a variety of critical notes.

The plan adopted of referring to the different islands by numbers only is not, we think, a good one, and saves little space, while it gives unnecessary trouble and is likely to lead to error. Nor is the map quite so clear as it ought to be. There are also some very obvious misprints in the scientific names, which the author, as he kindly tells us, will correct in subsequent issues of the work. But this useful summary of Mr. Cory's prolonged labours on this interesting avifauna deserves the cordial recognition of all ornithologists.

Order.	Species.	Peculiar.	Order.	Species.	Peculiar.
Pygopedes	3		Brought forward	148	12
Longipennes	19		Gallinæ	5	1
Tubinares	6	1	Columbæ	21	12
Steganopodes	12	1	Raptores	39	19
Anseres	30	1	Psittaci	15	14
Odontoglossæ	1		Coccyges	22	16
Herodiones	20	2	Pici	17	16
Paludicolæ	19	6*	Macrochires	35	21
Limicolæ	38	1	Passeres	283	182
Carried forward	148	12	Total	585	293

50. *Godman and Salvin's 'Biologia Centrali-Americana.'*†

[Biologia Centrali-Americana; or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. Edited by F. DuCane Godman and Osbert Salvin. (Zoology.) Parts CV. & CVI. 4to. London: 1892–93. Published for the Editors by R. H. Porter, 18 Princes Street, Cavendish Square, W.]

The sixteen pages devoted to Birds in the present parts of the 'Biologia' enable the authors to finish their account of the Trochilidæ with the genera *Stellula, Lophornis,* and *Prymnacantha,* and to commence the Cypselidæ with *Aëronautes, Panyptila,* and *Chætura.*

51. *Hartlaub on four rare Rails.*

[Vier seltene Rallen. Von Dr. G. Hartlaub. Abh. naturw. Ver. Bremen, xii. p. 389.]

The four rare Rails which our much-esteemed Foreign Member discourses upon are *Kittlitzia* (gen. nov.) *monasa* from Ualan, *Pennula ecaudata* and *P. sandwichensis* of the Sandwich Islands, and *Pennula palmeri** from Laysan Island, North Pacific. On this paper Dr. Sharpe's remarks (above, p. 252) and Dr. Hartlaub's reply (p. 256) should be consulted.

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* Mr. Cory is, we believe, in error in making *Rallus maculatus* a species peculiar to Cuba. It has a wide range in South America. See Scl. et Huds. Arg. Orn. ii. p. 148.

† For last notice of this work see above, p. 134.

52. *Lilford's 'Coloured Figures of British Birds.'*

[Coloured Figures of the Birds of the British Islands. Issued by Lord Lilford, F.Z.S. &c., President of the British Ornithologists' Union. Part XVIII., April 1891; XIX., July 1891; XX., December 1891; XXI., August 1892. 8vo. London.]

Since we last noticed the progress of Lord Lilford's work (Ibis, 1891, p. 455) four more parts have been published, making 21 in all now issued. We need hardly say that the recently issued figures quite maintain the high standard of accuracy and artistic treatment displayed in the previous numbers of this work, which, we trust, will be shortly brought to a successful conclusion.

53. *Martorelli on the Migration of Birds.*

[Le Mute regressive degli Uccelli Migranti e il loro scambio tra gli Emisferi Nord e Sud. Memoria del Prof. Giacinto Martorelli. 8vo. Milano: 1892. Estratto degli Atti della Soc. Ital. d. Sci. nat. 1892.]

Prof. Martorelli discusses the question of the relation of the moulting of birds to their migrations, and alludes especially to the writings of Messrs. Seebohm, Parker, and Tristram. He sums up his results in twenty conclusions. For these we must refer our readers to the original article, which well merits the attention of those interested in this obscure subject.

54. *Middendorff on Bird-life on the Russian Lighthouses.*

[Vogelleben an den Russischen Leuchtthurmen des Schwarzen, Kaspischen und Weissen Meeres. Von E. v. Middendorff. 8vo. Wien: 1892.]

Dr. E. v. Middendorff has compiled this report in compliance with the demands of the International Ornithological Congress of 1884 for such information. It contains an account of the occurrences of birds at 29 Light-Stations,—8 on the Caspian, 1 on the White Sea, and the remainder on the Black Sea and Sea of Azof. In the systematic part 113 birds are enumerated, but in many cases the exact species has not been determined.

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* *Porzanula palmeri*, Frohawk. Ann. N. H. ser. 6, vol. ix. p. 247 (1892).

55. *Mockler-Ferryman's Voyage up the Niger.*

[Up the Niger. Narrative of Major Claude Macdonald's Mission to the Niger and Benue Rivers, West Africa. By Captain A. F. Mockler-Ferryman, F.R.G.S., F.Z.S. To which is added a chapter on Native Musical Instruments, by Captain C. R. Day. 8vo. London: 1892.]

There are several allusions to birds in the course of Capt. Mockler-Ferryman's narrative of Major Macdonald's expedition, and in the Appendix (p. 310) will be found a list of 33 species of birds of which specimens were obtained on the Niger and Benue. The names have been furnished by Dr. Sharpe, and examples of most of the species have been deposited in the National Collection. We may mention that "*Agdydipna*" in the list is a misprint for *Hedydipna*.

56. *North on the Nesting of* Manucodia.

[Note on the Nidification of *Manucodia comrii*, Sclater. By A. J. North. Rec. Austral. Mus. ii. p. 32.]

The Rev. R. H. Rickard found *Manucodia comrii* breeding on Fergusson Island, S.E. New Guinea, in July 1891. The nest was a loosely-made, open structure, placed in a bread-fruit tree, 20 feet from the ground. The egg (which is figured on a coloured plate) is elongate ovoid in form, of a warm isabelline ground-colour, with purplish dots, blotches, and streaks, and measures 1·65 by 1·13 inch.

57. *North on Additions to the Tasmanian Avifauna.*

[Additions to the Avifaunas of Tasmania and Norfolk and Lord Howe Islands. By A. J. North. Rec. Austral. Mus. ii. p. 36.]

Amongst the rare grallatorial and natatorial birds that have recently appeared Mr. North chronicles *Erismatura australis* and *Spatula variegata* in Tasmania, and three species new to the ornis of Norfolk Island.

58. *Pigott on London Birds.*

[London Birds and London Insects (Revised Edition) and other Sketches. By T. Digby Pigott, C.B. Royal 8vo. London: 1892.]

Mr. Pigott's sketches of bird-life in London, the Shetlands, St. Kilda, and elsewhere are evidently those of an ardent observer who is devoted to a favourite subject. They have already become known to many of us in the pages of the 'Contemporary Review' and other periodicals, and will be much appreciated in their collected form. In the Appendix is given a list of wild birds noticed in London, based upon Dr. Hamilton's list of 1879 ('Zoologist,' 1879, p. 273). It records 94 species.

59. *Schalow on* Pratincola rubicola *in N.E. Germany.*

[Ueber das Vorkommen von *Pratincola rubicola* (L.) im östlichen Norddeutschland. Von H. Schalow. Sitz.-Ber. Ges. nat. Freunde, Berlin, 1892, p. 141.]

Just as the Elbe in Northern Germany divides the areas occupied by *Corvus corone* on the west and *C. cornix* on the east, so, it would appear from Herr Schalow's observations, does it separate the ranges of *Pratincola rubicola* and *P. rubetra*, except that between the Elbe and the Weser both species are found. East of the Elbe *P. rubetra* is the ordinary species, though it occurs occasionally on the west of that river, whereas west of the Elbe *P. rubicola* is by far the most predominant form. (*Cf.* Hartert, Ibis, 1892, p. 357.)

60. *Shufeldt on the Fossil Birds of the Oregon Desert Region.*

[A Study of the Fossil Avifauna of the Equus Beds of the Oregon Desert. By R. W. Shufeldt, M.D. Journ. Ac. Nat. Sc. Philad. ix. p. 389.]

Dr. Shufeldt now gives us a complete account of the very interesting fossil avifauna of the "*Equus*-beds" of Silver Lake in Central Oregon, concerning which he has previously published the "results of an initiatory study" (*cf.* Ibis, 1892, p. 574). Silver-Lake Region has been described by Prof. Cope in the 'American Naturalist' (1891, p. 970). The "*Equus*-beds" belong to the latest tertiaries, and are so called from containing abundant remains of several species of extinct horses.

After preliminary remarks on the physical characters of the district, its existing fauna, and the nature and condition of the abundant bird-remains found in the old lake-bottom, the author discusses the fossils group by group. Many of them are referable to existing species, but there are a large number which necessitate classification as extinct forms of recent genera. Some of these have been already described by Prof. Cope, but Dr. Shufeldt now characterizes as new *Larus robustus, L. oregonus, Anser condoni, Branta propinqua, Phœnicopterus copei, Ardea paloccidentalis, Fulica minor, Pediœcetes lucasi, P. nanus, Palæotetrix* (gen. nov.) *gilli, Aquila sodalis, Scolecophagus affinis,* and *Corvus annectens.* Finally the bird-life of the ancient lake is pictured as follows:—

"Great flocks of Swans, Geese, and Ducks were there, feeding on the marshy shores of the lake or disporting themselves upon its waters. With but few exceptions they were of modern genera and species. A ponderous Goose appeared among them, perhaps but sparingly during Pliocene time, for it must then have been nearly extinct. And a Swan, too, whose race has since died out, was also there, but it was of a size quite in keeping with present-day Swans. Several species of Grebe swam upon and dived in those ancient waters; they were all like our existing Grebes, and most probably had similar habits. To these groups we must add many individuals of a great, strange Cormorant (*Phalacrocorax macropus*), larger than any of our existing Cormorants, though probably, too, with habits not unlike theirs. Gulls and Terns in numbers were in the air, and doubtless files of Pelicans along the shore-lines. But the strangest figure upon the scene among the birds was a true Flamingo. It could not have been very abundant, for it has left but scanty remains. Still it was there, and its presence has its meaning—it may even suggest ideas as to what the climate may have been in those times. Herons were to be seen, and in the marshes cackled Coots and flew flocks of Blackbirds, no doubt with notes and habits very similar to those of their descendants of the present day. *Tringeæ* and Phalaropes coursed along the shores of the lake's margin, while upon its more rugged borders may have been seen Ravens perching, or even some representative of the Raptorial group. Further back from the lake's limits we would meet with several species of Grouse, and these were perhaps occasionally preyed upon by the Falcon-like Eagle and its companion, the lesser form, which may have been seen circling in the air overhead."

61. *Stejneger on Additions to the Japanese Avifauna.*

[Two Additions to the Japanese Avifauna, including Description of a new Species. By Leonhard Stejneger. Proc. U.S. Nat. Mus. xv. p. 371.]

The additions made to the Japanese avifauna in this article are *Tringa temmincki*, obtained near Tokyo in the autumn of 1891, and *Acanthopneuste ijimæ*, sp. nov., from the Idzu Islands, previously referred by the author to *Phyllopseustes coronatus* (Proc. U.S. Nat. Mus. 1887, p. 486).

62. *Stejneger on Mr. Henson's Collection from Yezo, Japan.*

[Notes on a Collection of Birds made by Harry V. Henson in the Island of Yezo, Japan. By Leonhard Stejneger. Proc. U.S. Nat. Mus. xv. p. 289.]

Mr. Harry V. Henson's "large and interesting" collection from the vicinity of Hakodadi is now in the U.S. National Museum, and Dr. Stejneger gives us a complete account of it. The specimens are referred to about 62 species, which are commented upon to a greater or less length. We note the following points:—The Little Grebe (*Tachybaptes fluviatilis* of the B. O. U. List) is now proposed to be called by the specific name *nigricans*, ex *Colymbus nigricans*, Scop.

Ann. I. Hist.-Nat. p. 77 (1769). This takes two years' precedence over *fluviatilis* of Tunstall, which is moreover (in Dr. Stejneger's opinion) a "*nomen nudum.*" *

Five specimens of *Eurynorhynchus pygmæus* were obtained at Hakodadi during the "fall migration" of 1884–5 and '86.

Dr. Stejneger proposes to change the name of the large Himalayan *Ceryle* from *Ceryle guttata* to *Ceryle guttulata*, "because *Alcedo guttata* of Vigors (1831) is preoccupied by *Alcedo guttata* of Boddaert (1783)." He regards *Ceryle lugubris* of Japan as distinct.

A fine pair of *Picus martius* are in Mr. Henson's collection. They are of an intense black, and the bill is somewhat larger than in European specimens. (*Cf.* Blakiston, Ibis, 1862, p. 325.)

The Japanese Wagtails are discussed at great length, and *Motacilla lugens*, Kittlitz, is distinguished from *M. grandis*, Sharpe.

The generic term *Cichloselys* of Bonaparte is proposed to be limited to *Turdus sibiricus*, which is considered to be generically distinct from *Geocichla*, though closely allied.

The new generic term *Urophlexis* is substituted for *Urosphena*, "preoccupied"—it is not stated where or how.

Parus hensoni of Yezo is described as a new Tit of the *palustris* group, while the *Parus japonicus* of Seebohm, from Hondo, is proposed to be called *Parus seebohmi*. There are thus three forms of the subgenus *Pœcile* in Japan.

Hypsipetes amaurotis hensoni is a new subspecies from Yezo.

63. *Thomson's 'British New Guinea.'*

[British New Guinea. By J. P. Thomson, F.R.S.G.S. London: 1892.]

This book appears to have been written principally for the laudification of Sir William Macgregor, the Administrator of British New Guinea, who, however, quite deserves all the attentions paid to him. It is useful to the student of the Papuan avifauna, as containing a quantity of geographical information, but, except in the Appendix, is singularly destitute of all references to natural history. We have, however, managed to find one paragraph that will be interesting to ornithologists. Speaking of the S.E. promontory of British New Guinea, the author says:—

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* [This is not quite the case, in my opinion, as the English and French names identify it without a doubt.—P. L. S.]

"The forests of the upper Kemp-Welch abound in birds of every kind, from modest forms to the most gorgeously plumaged Birds of Paradise and the most charming Pigeons. The successful capture of these Paradise-birds is an occupation only to be learned by experience. They usually congregate upon a certain tree called, in sporting parlance, 'the dancing-tree.' Here they meet at a certain hour to exhibit their gorgeous plumage by numerous elegant motions towards one another. Male birds usually possess the most brilliant colours, diffused over the whole surface of their glossy plumage, and appearing as tints of the most exquisite blending. They hop from branch to branch and from limb to limb, bowing and curtseying to one another gracefully and elegantly. The mountain natives make use of a very clever device for catching these beautiful birds by trapping. The most favourable place in the jungle is selected, and a clearing made, about thirty feet wide at one end, and gradually converging to a point like the letter V, where it terminates in a framework constructed of saplings crossing one another at intervals, and supported by their ends to two suitable trees. This structure is then perfected by attaching numbers of snares thereto, so placed as to trap the unwary birds in their flight through the tempting opening in the jungle. The skins of these birds, even to the native, possess some commercial value for ornamental purposes. The long feathers of the tails and wings are used for personal adornment, and the shorter feathers for the beautification of spears, shields, and other implements of war. That these beautiful birds are provided by nature with such gorgeousness of plumage for some specific purpose there can surely be no reasonable doubt; whether that purpose be sexual attraction, or is an effect produced by the influence of local environment, we do not venture to advance an opinion."

64. *Traquair's Address to the Royal Physical Society.*

[Address delivered at the Royal Physical Society, Edinburgh, by Dr. R. H. Traquair, F.R.S., on the word "Museum." Proc. R. Phys. Soc. Edinb. xi. p. 173.]

We venture to call the attention of all those interested in the arrangement of museums to Dr. Traquair's excellent remarks on this important subject. "It is not necessary that all the contents of a public museum should be exposed in glass cases." At the same time the exhibited collection should be as large, and contain as well selected a series of typical forms, as circumstances will allow, besides objects of general popular interest. Dr. Traquair endorses Sir William Flower's well-known views as to the "unfortunate separation of Palæontology from Biology."

XXVIII.—*Letters, Extracts, Notices, &c.*

We have received the following letters, addressed to the Editor of 'The Ibis':—

Sir,—In reply to your enquiries I have great pleasure in placing at your disposal the following memorandum respecting the "Crocodile-bird" of the Nile:—

In the latter part of February or the first days of March 1876, I, with several other members of my family, on the Nile between the first and second cataracts, noticed on a very large sand-bank near Derr (the capital of Lower Nubia) some crocodiles of considerable size, and several of the birds which are called by all the natives of the Nile Valley the "Crocodile-bird." As we had plenty of time to spare, I decided with my brother-in-law, Mr. John E. Hodges (who has recently died), that we would spend a few hours in watching the crocodiles and the Crocodile-birds. For this purpose, during the dark hours, we had a small pit dug on the western side of the large sand-bank in question, and about the peep of day the following morning we ensconced ourselves in the pit with the intention of remaining some hours, if necessary, until the crocodiles came on to the bank, as we believed they did every day, to bask in the sunshine and sleep.

We watched patiently until about noon, when two large crocodiles came out of the water on to the bank, and apparently were soon asleep. Several Crocodile-birds commenced flitting over them, and through our field-glasses we watched one bird and saw it deliberately go up to a crocodile, apparently asleep, which opened its jaws. The bird hopped in, and the crocodile closed its jaws. In what appeared to be a very short time, probably not more than a minute or two, the crocodile opened its jaws, and we saw the Crocodile-bird go down to the water's edge. As the sand-bank was, I should say, at least half a mile across, and the bird's back was turned towards us, we could not see whether it vomited in the water or drank, but in the course of a few seconds it returned to the crocodile, which opened its mouth again, and the bird again entered. The mouth was closed, and in a short time was opened again for the bird to come out, and the same operation was repeated at the river-bank. We saw the same bird enter the crocodile's mouth three times, and on three occasions run to the water to either vomit or drink.

Having satisfied our curiosity, and knowing that we could not bag the crocodile, and there being two or three Crocodile-birds about, I took aim and shot two of them. I could not assert positively that I shot the actual bird that we had seen go in and out of the crocodile's mouth, but one of the birds was presented to the Leicester Museum, and the other I have in a case at home.

Both my late brother-in-law and I have told these circumstances, since 1876, a hundred times or more, I suppose, and never knew that the fact of the Crocodile-bird entering the crocodile's mouth was seriously doubted until the conversation I had the pleasure of having with you and Mr. Seebohm at the Geographical Club on Monday the 14th inst.

I am, Sir,
Yours &c.,
JOHN M. COOK.

Ludgate Circus,
23rd November, 1892.

[We have great pleasure in giving publicity to Mr. Cook's interesting memorandum concerning a story universally believed on the Nile, but, so far as we know, not confirmed by eye-witness since the days of Herodotus (Hist. ii. ch. 68), Aristotle (Hist. An. ix. ch. 8), and Ælian (Nat. An. xii. 15).

It will be found alluded to by Geoffroy St.-Hilaire (Descr. d'Egypte, éd. 2, xxiv. p. 439, 1829), Mr. E. C. Taylor (Ibis, 1859, p. 52), Dr. A. L. Adams ('Nile Valley,' p. 54, 1870), Dresser (B. Europe, vii. p. 522), and numerous other writers, but not as confirmed by recent observations.

Curiously enough, a somewhat similar story is told of the crocodile of San Domingo (*Crocodilus americanus*) by Descourtilz (Voy. d'un Nat. iii. p. 26, 1809).

In a subsequent letter Mr. Cook identifies the Crocodile-bird as *Hoplopterus spinosus* (Shelley, B. Egypt, p. 232), not as *Pluvianus ægyptius*, often supposed to be the species in question. I have applied to the authorities of the Leicester Museum, but they cannot ascertain that any "Crocodile-bird" presented by Mr. Cook is now in that collection.—Ed.]

Sir,—In the last part of 'The Ibis' (1892, p. 481), Mr. De la Touche mentions, in his list of Foochow and Swatow birds, that Mr. Baun procured a specimen of a Barbet, said to have been shot near Foochow (it was at the village of Puching), which he sent to me for identification. This is quite correct. In December 1886 I received the bird in a parcel from Mr. Baun, and I immediately replied, telling him that it was (as Mr. Sclater also suspected) the common Malaccan *Megalæma versicolor*. In 1890 I showed the specimen to Mr. Seebohm, who agreed with me that it was very doubtful whether it was a Foochow bird.

I am, Sir,
Yours &c.,
R. Collett.

Christiania, 17th Dec., 1892.

Sir,—On the 25th and 26th October, 1892, I visited Dassen Island, about 33 miles north of Cape Town. I found a Cormorant breeding there which I have little doubt is *Phalacrocorax neglectus* (Wahlberg's Cormorant). It appears to correspond sufficiently well with the description of that species quoted in Sharpe's edition of Layard's 'Birds of South Africa' (p. 779) from Gurney's 'Birds of Damaraland' (p. 369). The men on the islands call them "Bank Duikers."

I had been on the look-out for this bird for some time, as I had a suspicion that it might prove to be *P. neglectus*. I had occasionally seen Cormorants which were apparently neither *P. capensis*, nor *P. lucidus*, nor *P. africanus*, but I had never been able to obtain a specimen.

This Cormorant was breeding in most cases in small colonies by itself, but in one instance I saw its nests and those of *P. capensis* placed together on the same rock. On Dassen Island *P. capensis* generally makes its nest on the ground, but all the nests of *P. neglectus* that I saw were placed on rocks near the sea. In some cases they were stuck or balanced on the top or edge of the rocks, where the seaweed, of which they were composed, enabled them to adhere. Seaweed usually formed the whole material of the nest, the lining being made of the finer and softer material. In a few instances the foundation of the nest was composed of the coarse dried stems of a plant that grows on the island, seaweed forming the top and lining of the nest. *P. capensis*, on the other hand, prefers sticks and stalks of plants when they are obtainable.

In shape the nests of *P. neglectus* were cylindrical, from 2 or 3 to 8 or 10 inches in height, with a good depression at the top.

The eggs in character exactly resemble those of our other Cormorants. They average larger than those of *P. capensis*, but vary in size. I did not find more than three in a nest, and two seemed to be the usual number.

The birds were very tame at the nest, in marked contrast to *P. capensis* and *P. lucidus*. I had actually in some cases to drive them off the nest to see if there were any eggs, and found sometimes that it was a new empty nest they were thus guarding!

The specimen sent was captured on the nest, and I could have caught others. When approached they uttered a loud, melancholy cry. The feathers on the forehead, immediately above the beak, are erected in life so as to form a short but very distinct crest. On the skin they lie flat.

The specimen sent is a male. The iris was brown above, greenish on the lower portion. The skin of the eyelid, and at the base of the lower mandible, as well as the legs, feet, and claws, are inky black. The bill was black, tips lighter. The throat was not bare. Length, in flesh, from tip of bill to end of tail, 2 feet 3⅜ inches. The eggs sent, procured at Dassen Island, are marked "26.10.92.C." 2 specimens; "26.10.92.q." 1 specimen.

Subsequently, when lying off Jutten Island, in the mouth of Saldanha Bay, I heard what was evidently the cry of the same species.

I am, Sir, &c.,
W. G. Fairbridge.

21st December, 1892.

[Professor Newton informs us that the specimen above mentioned as having been sent to England corresponds in all respects with Wahlberg's description of his *Graculus neglectus* (Journ. für Orn. 1857, p. 4), leaving little room for doubt that Mr. Fairbridge is right in assigning his birds to that species, to which probably belonged the examples obtained by Mr. Layard and Captain Sperling in Simon's Bay in 1867 (Ibis, 1868, pp. 120, 121), there referred by the former to *Phalacrocorax carbo*, but suggested by our predecessor to belong to some other species.—Ed.]

Sir,—In a recent paper by Dr. Oustalet on Nias birds (Bull. Soc. Philom. (8) iv. pp. 107–122), he mentions a specimen of *Cittocincla tricolor* (Vieill.) from that island; and the presence of this species, together with my *Cittocincla melanura*, induces him to believe that the latter, after all, may not be quite so distinct as I had supposed.

I wish to mention that when Dr. Oustalet kindly showed me his materials, during a recent visit to the Paris Museum, I immediately noticed that the skin of the example of *Cittocincla tricolor* was of a very different "make" from that of those belonging to *C. melanura*, and I have no doubt whatever that it was a Sumatran or Malaccan skin, which had accidentally become mixed with the Nias birds. The series *C. melanura* in the Paris Museum proves in the most evident way that the species is a perfectly distinct one; there is not the least gradual transition from *C. tricolor*, with the lateral tail-feathers broadly white-tipped, to the uniform black-tailed *C. melanura*, and the slight whitish edges at the tip of the tail-feathers of some *young* specimens of the latter evidently disappear by abrasion.

I am, Sir,
Yours &c.,
T. Salvadori.

Turin, Zoological Museum,
25th Jan., 1893.

Sir,—On page 133 of 'The Ibis' for January I observe a short critique on a paper by me on *Cyanorhamphus erythrotis* from Antipodes Island, which appeared in the last volume of the 'Transactions' of the New Zealand Institute. "Mr. Forbes is not correct, we believe," it is stated, "in his identification of the *Cyanorhamphus* of Antipodes Island belonging to the group of *C. novæ-zealandiæ*." I am quite ready to agree with Count Salvadori that the Antipodes-Island bird is the same as that described by Mr. Reischek as *C. hochstetteri*, the description of which I regret I had overlooked when writing the paper referred to. I am not, however, prepared to admit that *C. hochstetteri* is distinct from *C. erythrotis*. At all events, though Count Salvadori considers them different (and his opinion is one to be dissented from only with the greatest caution), he could not, when comparing them along with me, point out any real distinguishing characters beyond a slight difference in the shade of the yellow, and the fact that they had different habitats. I feel confident that, when the skeleton of *C. erythrotis* is compared with that of the Antipodes-Island bird, the same characteristic strength in the wing- and leg-bones seen in the latter will be also present in the skeleton of the former. In the British Museum Collection there are two specimens of *Cyanorhamphus erythrotis*, one without locality and the other from the Macquarie Islands, both of which I have most carefully examined and compared with my own specimen from Antipodes Island now in the British Museum, and I can find nothing by which they can be separated from each other. Indeed, the two specimens of *C. erythrotis* in the Museum present between themselves greater differences than the Antipodes-Island specimen does from either. I have shown the three specimens to Dr. Sharpe, and he quite agrees with me that they all belong to the same species. The name of *C. hochstetteri* becomes, therefore, in my opinion a synonym of *C. erythrotis*.

I am, Sir,
Yours &c.,
HENRY O. FORBES.

1 Philbeach Gardens,
Earl's Court, S.W.
8th Feb., 1893.

SIR,—Mr. A. H. Everett has forwarded for my inspection a small collection of birds obtained by Dr. Haviland on Kina-Balu in the spring of 1892. The only species of interest represented in it is *Zosterops squamifrons*, Sharpe, a species discovered by Mr. Hose on Mount Dulit, in Sarawak, and now recorded for the first time from Kina-Balu.

Dr. Haviland also procured the young of *Androphilus accentor*, Sharpe. It differs from the adult in having no white on the throat nor ashy grey on the breast, these parts being brown, slightly lighter on the throat, where the feathers terminate in dusky-black spots. The labels bear the date of April, and the altitude of some of the specimens is given as 11,000 feet. All my examples of this form were obtained at about 8000 feet.

I am, Sir,
Yours &c.,
JOHN WHITEHEAD.

SIR,—When I published my description of *Loxops ochracea* (Ibis, 1893, p. 112) Mr. Scott Wilson had not issued the fourth part of his 'Aves Hawaiienses.' Now, however, this part has appeared, and I observe that its authors have applied to the bird from Mauai the name *aurea*, Finsch (nec *Drepanis aurea*, Dole), and have put it in the genus *Himatione*. I therefore am bound to justify my name of "*Loxops ochracea*," and to endeavour to disentangle the confusion which surrounds this species.

Judge Dole, in the 'Hawaiian Almanack' for 1879 (p. 45), described the young of *Loxops coccinea* of Hawaii under the name *Drepanis aurea*. Next, Dr. Finsch, in 'The Ibis' for 1880 (p. 80), described a bird from Mauai as *Hypoloxias aurea*, and identified it with the *Drepanis aurea* of Dole. Finally, Dr. Sharpe (Cat. B. x. p. 50) followed Dr. Finsch in putting the bird into the genus *Hypoloxias*, but applied to it the older generic name of *Loxops*.

In his new part, Mr. Wilson, in trying to unravel this confusion, has unfortunately made it much worse by retaining Dr. Finsch's name *aurea* and putting the bird into the genus *Himatione*. This is entirely a mistake, because the bird from Mauai is, as I can prove by my very large series of males, females, and young, a true *Loxops*. The male only differs from the male of *Loxops coccinea* in colour, and the females of both species are barely distinguishable.

Now it is a rule in zoological nomenclature that a name once used in a genus, even if only a synonym, cannot be used a second time; therefore I maintain that the term "*aurea*," having been used by Dole for *Loxops coccinea* of Hawaii, is inadmissible for the Mauai bird, which must stand as follows:—

LOXOPS OCHRACEA, Rothsch. Ibis, 1893, p. 112.
Hypoloxias aurea, Finsch, Ibis, 1880, p. 80.
Loxops aurea, Sharpe, Cat. B. x. p. 50.
Himatione aurea, Wilson, Aves Haw. pt. iv. 1893.

I am, Sir,
Yours &c.,
W. ROTHSCHILD.

Tring Park,
March 6th, 1893

The Preservation of the Native Birds of New Zealand.—In our last number (above, p. 158) we gave an abstract of an excellent memorandum drawn up by Lord Onslow, late Governor of New Zealand, on a plan for the preservation of the native birds of that colony by setting apart two islands for this purpose, namely Little Barrier or Hauturu Island in the north and Resolution Island in the south. As regards the first of these islands, we have received a copy of the Report by Mr. Henry Wright (addressed to the Hon. John Ballance, Premier of New Zealand) upon the subject. According to Mr. Wright, Hauturu Island, in the Gulf of Hauraki, which is almost circular in shape, and contains an area of from 9000 to 10,000 acres, rising in the middle to an elevation of about 2000 feet, is very well adapted for the purpose required. Writing with a thorough knowledge of the whole of the North Island, Mr. Wright is able to say that there is no other part of it where the native birds are to be found in anything like such profusion and variety. He gives a list of forty species to be met with within its limits, and mentions the Stitch-bird or Kotihe (*Pogonornis cincta*) and the large dark Kiwi (*Apteryx bulleri*) as both found there. There are slight difficulties in the way of the project, such as the presence of about a dozen Maoris now living on the island, and of a claimant for the timber, which, in the shape of Kauri pine (*Dammara australis*), is present in large quantities. There are no wekas in the island to destroy the birds'-eggs, and there are no bees, which, for some reasons, are considered to be inimical to the native birds in New Zealand. The wild pigs, formerly numerous, have been killed out, and the Mutton-bird (*Œstrelata gouldi*), the young of which were formerly eaten by the pigs, will consequently be able to breed again undisturbed. Cats, unfortunately, are very numerous, but Mr. Wright proposes to offer at once a reward for their destruction, which is, of course, of great importance.

Mr. Wright's report seems quite convincing as to the suitability of Hauturu Island for the object in view, but we regret to hear that some difficulties have arisen in the Parliament of New Zealand as to the appropriation of the funds required for the purpose.

Lord Onslow, however, is not disposed to let the matter drop, and will, we are sure, be strongly supported by Lord Glasgow, the present Governor of New Zealand, in carrying the plan to a successful issue. The Zoological Society of London, whose attention has been called to the scheme, have passed a series of resolutions in its favour.

News of Ornithologists Abroad.—Mr. F. Withington now writes to us from new quarters near Tulancingo, in the State of Hidalgo, Mexico, and says:—"I have changed my place, and have come here to see what I can do in planting. I am now some 30 leagues from Tulancingo, and about 15 from Tuxpan, on the Atlantic, which you will find on the map between Vera Cruz and Tampico. The tunnel-contract at Mexico City did not turn out well, and I am now going to try my luck in coffee. This place is quite tropical, tree-ferns abound, and there is any amount of birds, which I am now returning to work at with great zest."

Mr. O. V. Aplin writes from Santa Elena, Monzon, Uruguay, on January 8th, as follows:—"I am now making this my head-quarters, though I have spent some weeks on and off in the (new) Department of Flores, at an estancia only three leagues from here, and therefore in the same district. I have also made a journey to the Rio Negro, near where the Gee and our Arroyo Grande flow into it. I remained there about ten days and got examples of nearly twenty new species, including the beautiful Blue Tanager figured in your book (*Stephanophorus leucocephalus*), and a fine Parrot, which does not seem to be included in the 'Argentine Ornithology.' It is dark green all over, a few red feathers on the neck of the male, and the under surface of wings red and yellow. It is (improperly) called the 'Barranquéro,' but nests in hollow trees. A Curassow is also found there and well known as 'Pavo del monte.' I *saw* one, having a good view of it, but I only had my small gun, and when waiting for a friend to come up with a 12-bore it slipped away and escaped in the thick 'monte.' From descriptions by Englishmen, and from what I saw, I have little doubt it is the *Crax sclateri*. Perhaps I may get a skin of it from a man whom I taught to skin there. I have obtained specimens of about 100 species, and identified a good many of the larger birds besides. Vultures have been abundant, on account of the *seca* and the numbers of dead cattle. *Cathartes atratus* breeds here, and *C. aura* has been a fairly numerous visitor, but does not breed, so far as I know. This has been a very bad season for a naturalist. The fearful drought, which has brought the country into a most serious condition, is such that I can get hardly any plants or butterflies, so I shall do very badly in this way."

Dr. PERCY RENDALL, F.Z.S., has accepted an appointment as Resident Medical Officer to the Sheba Gold-Mining Company in the Barberton District of the Transvaal, and has left England to take up his quarters at Eureka City, at an elevation of 5000 feet above the sea-level. Dr. Rendall made a good collection of birds during his recent residence at Bathurst, on the Gambia, of which he gave us an account in 'The Ibis' for last year (Ibis, 1892, p. 215). His new appointment will give him excellent opportunities for advancing ornithological knowledge in a little-explored district.

The Humming-birds of Paraguay.—Dr. Carlos Berg sends us for examination a skin of a Humming-bird from Paraguay, belonging to the National Museum of Buenos Ayres, which Mr. Salvin has kindly determined as *Polytmus thaumantias* (Cat. B. xvi. p. 174). As examples of this species were obtained at Chapada, in Matto Grosso, by H. H. Smith (*op. cit.* p. 175), it may well occur in Paraguay. It should be therefore added to the list of Humming-birds of Paraguay given in Graf v. Berlepsch's Catalogue (J. f. O. 1887, p. 120), as may be also *Hylocharis sapphirina* (Cat. B. xvi. p. 245), of which specimens were procured by Mr. Graham Kerr on the Pilcomayo (*cf.* Ibis, 1892, p. 135). The recognized

Trochilidæ of Paraguay will therefore be (using Mr. Salvin's nomenclature and arrangement) six, namely:—

1. Chlorostilbon splendidus.	4. Polytmus thaumantias.
2. Lampornis violicauda.	5. Hylocharis sapphirina.
3. Heliomaster furcifer.	6. Chrysuronia ruficollis.

To these should probably be added *Sparganura sappho, Leucippus chiogaster*, and perhaps *Leucochloris albicollis*, which occur in Northern Argentina (see Arg. Orn. vol. ii.), and will ultimately, no doubt, be found in Paraguay. A series of birds from Paraguay would make a valuable addition to the great collection in the British Museum, which has scarcely any well-authenticated specimens from that country.

The Sheathbill in Ireland.—At the Meeting of the Zoological Society of London on the 28th of February last the Secretary, on behalf of Mr. R. M. Barrington, exhibited a specimen of the Antarctic Sheathbill (*Chionis alba*), killed at the Carlingford Lighthouse, co. Down, Ireland, in December last. Full particulars concerning this remarkable occurrence will be found recorded by Mr. Barrington in the 'Zoologist' for January last (Zool. ser. 3, vol. xvii. p. 28). There can be no doubt that the bird in question is an adult example of the Antarctic Sheathbill (*Chionis alba*) in nearly perfect plumage. This species is known to occur only in the Falkland Islands and South Georgia. We may presume that the specimen in question could hardly have occurred so far from its native home without the assistance of mankind in some shape.

New British Polar Expedition.—Mr. Frederick George Jackson, F.R.G.S., who is organizing the New British Polar Expedition, is anxious to meet with a naturalist, of vigorous frame and suitable temperament, to accompany him in his daring enterprise. Mr. Jackson hopes to leave England this summer and to pass the winter in Franz Josef's Land, so as to devote the following year to the investigation of the question how far that land extends towards the North Pole. We need hardly point out what an excellent opportunity is here afforded for a young and ardent ornithologist to explore a wholly unknown region, and perhaps discover the true home of the Knot and the Curlew Sandpiper.

Obituary.—The Rev. F. O. Morris; Henry Whitely.

The Rev. Francis Orpen Morris, Rector of Nunburnholme, in Yorkshire, during the past 39 years, though he did not claim to be a scientific ornithologist, was passionately devoted to the study of our native birds, and took a leading part in the well-justified agitation that has lately spread so far for their protection. Mr. Morris was born at Cove, in Ireland, on the 25th March, 1810, and was educated at a private school and at Worcester College, Oxford, where he took his B.A. degree in 1833. His principal work was a 'History of British Birds,' of which a third edition in six volumes was issued some two years ago. He was also the author of 'The Nests and Eggs of British Birds' (3 vols. London, 1856–61), and of many other popular works on the Natural History of the British Islands. His name is well known to readers of 'The Times' from numerous letters contributed to the columns of that newspaper for a long series of years on subjects connected with natural history. He died at Nunburnholme on the 10th of February last.

Henry Whitely.—Intelligence has been received in this country of the death, in the interior of British Guiana, on the 11th of July last year, of Henry Whitely, Jun., the well-known traveller and collector. Whitely was born at Woolwich on June 18th, 1844, the son of Mr. Henry Whitely, of Woolwich, formerly Curator of the Royal Artillery Institution. He made his first expedition to Japan in 1864, and the ornithological results were published in this Journal*.

After returning to Europe, Whitely proceeded, in 1867, to Western Peru, and made good collections of birds at various points in the provinces of Arequipa and Cuzco*. Here he discovered, amongst other novelties, the splendid *Oreonympha nobilis* (Gould, Trochilidæ, Suppl. pl. 42), pronounced by Gould to be "one of the finest Humming-birds" he ever described.

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* "Notes on Birds collected near Hakodadi, in Northern Japan." By Henry Whitely, Jun. Ibis, 1867, p. 193.

After passing some time in Southern Peru, Whitely proceeded north, and crossing the Andes descended the Amazons to Pará. On his way down he stayed some time at Yquitos, in Eastern Peru, and collected a fine series of the birds of this rich and varied avifauna.

The last years of Whitely's life were devoted to the exploration of the wilds of British Guiana, in which he passed the greater part of his time, accompanied only by his Indian followers. During this period he made large collections of birds, and added materially to our knowledge of the Guianan avifauna. Mr. Salvin has contributed to this journal a complete list of the species obtained by Mr. Whitely, which were upwards of 600 in number†. Among Whitely's most notable discoveries in British Guiana, and there were many of great interest, we may allude especially to *Calliste whitelyi* (Ibis, 1884, p. 445, pl. xiii.), *Lathria streptophora* (Ibis, 1884, p. 448, pl. xiv.), *Pipreola whitelyi* (Ibis, 1884, p. 449), and *Lophornis pavoninus* (Gould, Monogr. Troch. Suppl. pl. 36), all very remarkable additions to the groups to which they belong. Whitely also did a considerable amount of geographical work, and in 1884 published an account of his explorations of the extraordinary table-topped mountains Roraima and Kukenam, in the 'Proceedings' of the Royal Geographical Society‡.

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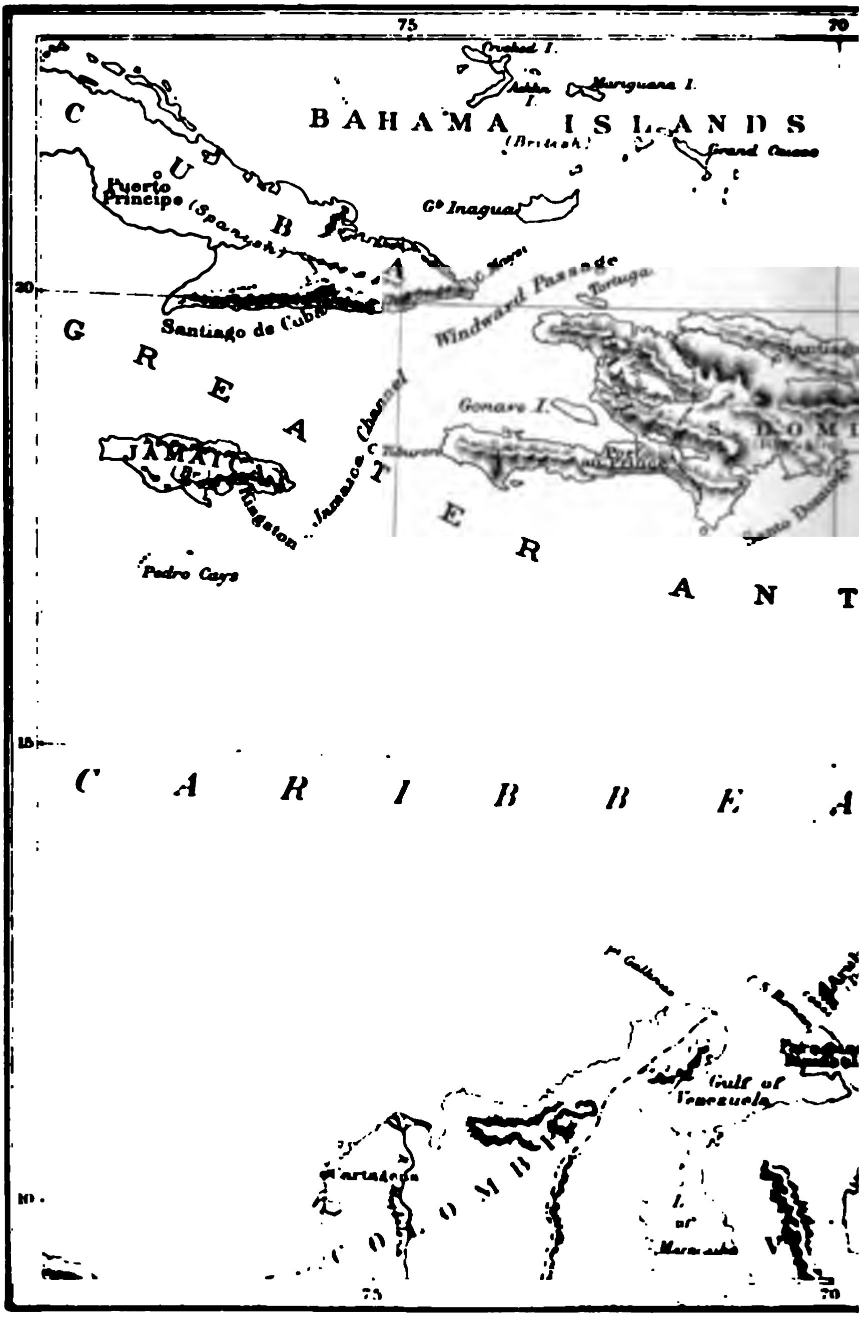
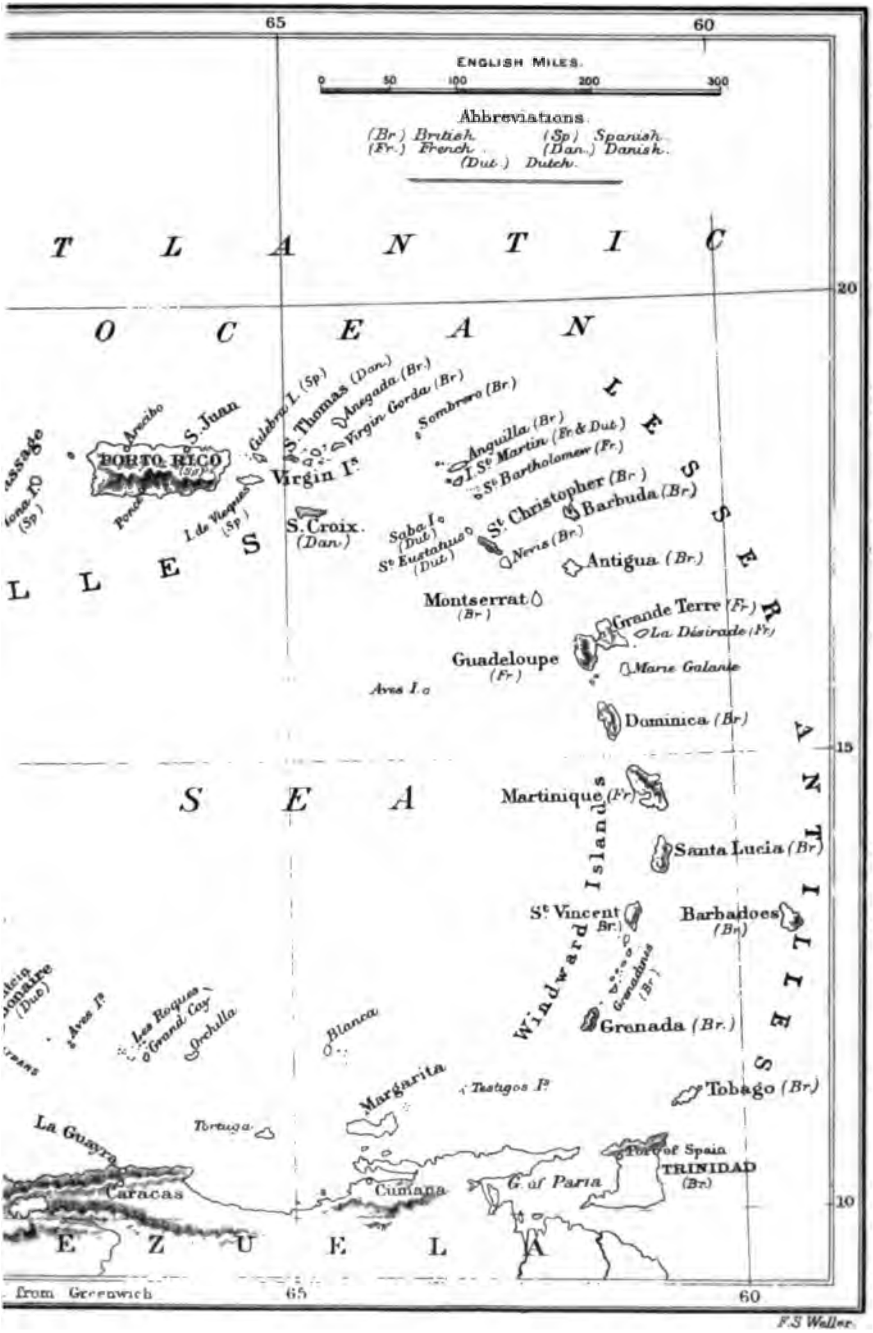
* "On Peruvian Birds collected by Mr. H. Whitely." By P. L. Sclater and Osbert Salvin. Pt. I. P. Z. S. 1867, p. 982; II. 1868, p. 173; III. 1868, p. 568; IV. 1869, p. 151; V. 1869, p. 598; VI. 1873, p. 184; VII. 1873, p. 779; VIII. 1874, p. 677; IX. 1876, p. 15.

† "A List of the Birds obtained by Mr. Henry Whitely in British Guiana." By Osbert Salvin. Ibis, 1885, pp. 195, 291, 418, and 1886, pp. 57, 168, 499.

‡ Proc. R. Geogr. Soc. vi. p. 452.


75
70
Crooked I.
Acklin I.
Mariguana I.
BAHAMA ISLANDS
(British)
Grand Caicos
Gt Inagua
C U B A
Puerto Principe
(Spanish)
Santiago de Cuba
Windward Passage
Tortuga
20
G R E A T E R A N T
Gonave I.
Tiburon
Port au Prince
S. DOMI
Santo Domingo
Jamaica Channel
JAMAICA
(Br.)
Kingston
Pedro Cays
15
C A R I B B E A
Gulf of Venezuela
Cartagena
C O L O M B I
L. of Maracaibo
10
75
70

MAP OF WEST


65
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ENGLISH MILES.
0 50 100 200 300
Abbreviations.
(Br.) British. (Sp.) Spanish.
(Fr.) French. (Dan.) Danish.
(Dut.) Dutch.
T L A N T I C
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PORTO RICO (Sp)
Arecibo
S. Juan
Ponce
I. de Vieques (Sp.)
Culebra I. (Sp)
S. Thomas (Dan.)
Anegada (Br.)
Virgin Gorda (Br.)
Virgin Is
S. Croix (Dan.)
Sombrero (Br.)
Anguilla (Br.)
I. St Martin (Fr. & Dut.)
St Bartholomew (Fr.)
St Christopher (Br.)
Barbuda (Br.)
Saba I. (Dut.)
St Eustatius (Dut.)
Nevis (Br.)
Antigua (Br.)
Montserrat (Br.)
Grande Terre (Fr.)
La Désirade (Fr.)
Guadeloupe (Fr.)
Marie Galante
Aves I.
Dominica (Br.)
Martinique (Fr.)
Santa Lucia (Br.)
St Vincent (Br.)
Barbadoes (Br.)
Grenadines (Br.)
Grenada (Br.)
Windward Islands
Tobago (Br.)
Port of Spain
TRINIDAD (Br.)
G. of Paria
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ona I. (Sp.)
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Aves Is
Los Roques
Grand Cay
Orchilla
Blanca
Margarita
Testigos Is
Tortuga
La Guayra
Caracas
Cumana
E Z U E L A
from Greenwich
F.S. Weller.

N ISLANDS.

THE IBIS.

SIXTH SERIES.

No. XIX. JULY 1893.

XXIX.—*On the Birds of the Islands of Aruba, Curaçao, and Bonaire.* By Ernst Hartert.

(Plates VIII., IX.)

Contents.

		Page
I.	Introduction	289
II.	Birds of Aruba	293
III.	Birds of Curaçao	311
IV.	Birds of Bonaire	326
V.	General Conclusions	337

I. *Introduction.*

The three Dutch West-Indian Islands of Aruba, Curaçao, and Bonaire (see map, Plate VIII.) are situated off the western part of the north coast of Venezuela. Aruba, being only about 16 miles from Cape San Roman, the north point of the peninsula of Paraguana, is nearest to the continent; Curaçao lies about 43 miles to the east; and Bonaire, the most oceanic of the three, still further to the east. Although near to the mainland, these islands do not, like Trinidad, belong geologically to the continent, but are of a different formation. They are surrounded by a coral-limestone belt, and for the most part are covered with a thick coral-limestone capping, and parts of coral-reefs are seen near Willemstad on Curaçao, and on the east coast of Bonaire; while Aruba, for almost its entire length on the leeward side, is skirted by a coral-reef, inside of which is a calm and beautiful lagoon.

The interior parts of the islands consist of sedimentary rocks, in several places pierced by volcanic rocks, while on Aruba grey granite is said to predominate, and many quartz veins are found, containing a considerable amount of gold. Deposits of phosphate are distributed over the islands (*cf.* Blackburn, 'Aruba-Phosphate,' p. 5).

The geologist, Professor K. Martin, who explored the islands in 1885, came to the conclusion that they were formerly atolls; but his conclusion is questionable, for a similar coralline belt is found on many West-Indian islands.

The same naturalist (*cf.* 'Bericht über eine Reise nach Niederländisch Westindien,' 1887) came to the conclusion "that the islands of Aruba and Curaçao (the materials collected on Bonaire were too incomplete for any conclusions) are zoologically closely allied to the continent of South America, and, on the other hand, that the fauna of both differs in many points." Both these conclusions of the learned author—whose excellent book was of much service to me—must, however, be qualified in some way, although they are not altogether wrong. It is true that the greater part of the fauna is similar to that of the northern parts of Venezuela, but there are likewise a great many forms of West-Indian origin, and this not only among the birds, but also among the reptiles, and, according to Dr. Kobelt, very strikingly among the land-shells. The ornis and the whole fauna of the three islands are generally similar, although there are some remarkable differences.

The idea that the fauna of these islands is the same as that of the adjacent parts of the continent, together with their barren and rocky appearance from the sea, and the exaggerated reports of their heat and dryness, are perhaps the reasons why the ornis of Aruba and Bonaire remained unexplored until my researches, and why that of Curaçao has only quite recently, and incompletely, been explored.

No tropical forest is found on the islands, but trees of different kinds abound, many of them introduced. The date-palm and the tamarind have been introduced and grow splendidly; the cocoanut-palm grows wherever it is planted. The bitter orange is grown in several large gardens to supply the valuable peel with which the famous Curaçao-liqueur is made. A great part of the islands is planted with the dividivi-tree (*Libidibi coriacea*), the husks of which are largely exported. The most characteristic features of the landscape, however, are the gigantic species of *Cereus, Opuntia,* and *Melocactus,* and the large fields of *Aloë.* The largest tree I saw on the islands was an old and fine *Eriodendron,* at the foot of Mt. Christoffel, not far from Savonet. On all the islands the *Rhizophora* grows here and there on the coast, and in many places over a great extent.

As I have stated above, the accounts of the extraordinary dryness of these islands are exaggerated. The year 1892 was, it is true, an unusually wet one, and 1885, the year in which Professor Martin visited the islands, was perhaps one of the driest of the century. Having read the description of Martin and that of Herr Peters (J. f. O. 1892, p. 105) in manuscript, I did not expect to find much vegetation. Great, therefore, were my joy and astonishment when on the 3rd of June, at daybreak, I saw the picturesque rocks of Curaçao before me, sparsely but thoroughly covered with the freshest green.

That day I could not leave the steamer for hours, and the shops of Willemstad were not opened before 11 o'clock, on account of the pouring rain—and rain troubled me more than once after this on these "rainless" islands. The vegetation, therefore, was rather rich during my stay, and many lovely flowers were seen, especially on the slopes of the Christoffel, where I found three species of orchids. These plants, of course, must be indigenous, and trees of several metres in girth and of considerable height cannot grow up and disappear at short intervals.

Fresh water is very scarce and valuable at times, and there are only one or two places on each island with natural springs; but there are beds of rivulets on the slopes of the

Christoffel, and also on Aruba and Bonaire, which must sometimes be filled with water.

The spring at Hato on Curaçao is the only known habitat of a little fish (*Pœcilia vandepolli*). Of water-beetles I caught examples of several species on Curaçao and Bonaire. Mammals are very scarce; I found only one species of Bat, and the European Rat and Common Mouse. A species of Hare is common on Aruba and Curaçao, but is not found on Bonaire. The Venezuelan Deer has been introduced in Curaçao, and a great number of goats run all over the islands, and, no doubt, do much harm to the vegetation.

Bird-life is abundant, and there are many species that could not be more numerous anywhere. Breeding-places of sea-birds are found only on Aruba and Bonaire, and they are not very extensive, but enormous numbers of sea-birds breed on "Los Aves," east of Bonaire, and "The Monks," west of Aruba. Now and then boats go there and bring large quantities of eggs to Curaçao for sale as food. Unfortunately I was too late, so I was told, for the egg-season, and therefore I did not visit those uninhabited rocks, thinking that the results, at that time of the year, would not be sufficient to repay the costs and hardships of such a trip in one of the fishing-boats, but I should advise future explorers to go there at the proper time.

The trade-wind blows over the islands almost incessantly, with more or less vigour, and on exposed parts all the trees lie over to the westward, presenting a peculiarly stormy appearance. The strong wind is, perhaps, one of the chief reasons why insect-life is so scarce. Reptiles, however, are very numerous, but not many species occur. Bird-life, too, is influenced by the wind, for birds are more numerous in places where the trade-wind does not penetrate, while on exposed plateaus they are very scarce as a rule.

On Curaçao I collected for three weeks altogether, and visited many places in all parts of the island, staying 10 days at Savonet at the foot of the Christoffel, ascending to the top of this mountain, staying at Willemstad, Beekenburg, and Hato, and exploring the country round these places.

On Aruba I remained 16 days, and about the same time on Bonaire. I visited many places on both these islands, the hills and the plains, the barest and driest places, and the richest and best-wooded parts, and, with the help of my wife, collected birds vigorously all the time.

The almost continuous sunshine, the beautiful clear atmosphere, the salubrious and wonderfully warm temperature, never or seldom rising to an unendurable heat, and the picturesque scenery gave me pleasures which can never be forgotten.

I wish here to express my sincerest thanks to my friend Freiherr Hans von Berlepsch, in whose museum and company I compared and studied the greater part of my collection on my return.

The types and the first pick of all my skins are in Mr. Walter Rothschild's Museum at Tring, and most of the duplicates, containing some co-types, are in Freiherr von Berlepsch's collection.

II. *Birds of Aruba.*

Aruba is the driest and in most parts the barest of the three islands. There are several good breeding-places for sea-birds. I was on the island from the 21st of June to the 5th of July, the season when but few wanderers from the north can be expected, and therefore most of the birds that I collected are residents. The island is, of course, resorted to by several northern birds in winter, and Venezuelan birds are said to visit it often in autumn.

I am much obliged to several inhabitants of Aruba, and above all to our amiable host, Dr. Coates Cole, the English surgeon of the island.

Nothing has as yet been written on the birds of Aruba. But Prof. Martin mentions in his book that he saw a *Conurus* that was different from *C. pertinax* of Curaçao, a large kind of parrot, a *Mimus*, two Humming-birds, an *Icterus*, an *Ortyx*, and a *Pelecanus*. Besides this, Mr. G. N. Lawrence has described a living parrot from Aruba under the name of *Chrysotis canifrons*, and so long ago as 1658 the French traveller Rochefort stated that he saw two kinds of Humming-birds, of which one was the smallest and the most beautiful he knew, on Aruba (Berl. J. f. O. 1892, p. 65).

All the above-mentioned birds were found by us, and collected in sufficient numbers to enable us to identify them.

1. MIMUS GILVUS ROSTRATUS, Ridgw. Proc. U. S. N. M. 1884, p. 173 (Curaçao); Berl. J. f. O. 1892, p. 74 (Curaçao); Peters, J. f. O. 1892, p. 114.

(1) ♂ ad. sect. Aruba, 22 vi. 1892. Wing 4·4 inches, tail 4·6, culmen 0·9, tarsus 1·4.

(2) ♂ ad. sect. Aruba, 23 vi. 92. Wing 4·25 inches, tail 4·5, culmen 0·9, tarsus 1·4.

The specimens of this bird from Aruba agree in every respect with those from Curaçao. Berlepsch (*l. c.*) has said much about this form, which to a certain extent varies individually. It certainly does not deserve more than subspecific rank.

The "*Tjutjubi*" is not rare on Aruba, but less numerous than on Curaçao.

The iris is dark orange-brown, bill and feet black.

Its food consists of fruits, chiefly that of the *Cereus*, and beetles.

The nest is a large and somewhat loose structure, mostly placed in the dividivi-trees. The eggs are four or five in number, with the well-known coloration of those of the other forms of *Mimus*, all much of the *Turdus*-type, thereby confirming my opinion that *Mimus* should not be removed too far from the Thrushes.

The name "*Tjutjubi*" is taken from an often-heard note of this bird, closely resembling these syllables.

I found fresh eggs on Curaçao in the middle of June, and hard-set ones at the beginning of August. In the meantime I frequently met with quite young birds flying about, and also found some nestlings.

The "*Tjutjubi*," sitting on the top of the high *Cereus*, and often singing its pleasant notes even from the roofs of the houses, is one of the most characteristic features of the avifauna of Curaçao, Bonaire, and Aruba.

2. Dendrœca rufopileata, Ridgw.

Dendroica rufopileata, Ridgw. Proc. U. S. N. M. 1884, p. 173 (Curaçao); Berl. J. f. O. 1892, p. 76 (Curaçao).

This bird is very common on Curaçao and Bonaire, but rather scarce on Aruba, where I found it in a few localities only, and in small numbers. I have only three skins from Aruba. For further details see below, p. 311.

3. Certhiola uropygialis (Berl.).

Cœreba uropygialis, Berl. J. f. O. 1892, p. 77 (Curaçao).

Not rare on Curaçao and Bonaire, but much less numerous on Aruba than on the other two islands. Aruban specimens agree in every respect with those from Curaçao.

4. Euetheia sharpei, Hartert, Bull. B. O. C. vii. p. xxxvii.

Not rare on Aruba.

5. Zonotrichia pileata (Bodd.), Berl. J. f. O. 1892, p. 82 (Curaçao).

This bird is common on Curaçao, where it is met with everywhere. On Aruba it is very rare, and unknown on Bonaire. The single specimen I have from Aruba has a very stout bill, but otherwise agrees entirely with those from Curaçao.

6. Icterus xanthornus curaçaoensis (Ridgw.), Berl. J. f. O. 1892, p. 82 (Curaçao).

Icterus curaçaoensis, Ridgw. Proc. U. S. N. M. 1884, p. 174; Scl. Cat. B. B. M. xi. p. 381 (1886).

Berlepsch has carefully compared several specimens of this bird from Curaçao with those from other localities, and has pointed out that there is nothing to distinguish the Curaçao form but its longer bill. It is true that the bills of the Curaçao birds are longer than usual, and the colour is also a little paler as a rule; it may therefore stand as a subspecific form of *Icterus xanthornus.*

The specimens from Curaçao all agree, but two males from Aruba have the bills shorter and stronger, and also the yellow colour brighter and more tinged with orange. They therefore point more to the true continental *Icterus xan-*

thornus. This is another reason for considering the Curaçao bird merely a subspecies. The measurements of my specimens are as follows:—

♂ ad. sect. Aruba, 23 vi. Culmen 0·9 inch, wing 3·9.
♂ ad. sect. Aruba, 1 vii. Culmen 0·88 inch, wing 3·8.
♂ sect. Curaçao, 8 vi. Culmen 1 inch, wing 3·7.
♀ sect. Curaçao, 13 vi. Culmen 1·05 inch, wing 3·5.
♀ sect. Curaçao, 14 vi. Culmen 1·06 inch, wing 3·7.
♀ sect. Curaçao, 16 vi. Culmen 1 inch, wing 3·5.
♂ sect. Curaçao, 2 viii. Culmen 1·05 inch, wing 3·7.

It is, I think, very interesting that the birds from Aruba, the island nearest to the continent, agree better with the continental form than those from Curaçao. The bird is equally common on all three islands, but only where it finds sufficient trees in which to build its long hanging nest. I have not procured skins from Bonaire, but the birds there agree with those from Curaçao. I got an egg on the 22nd of July on Bonaire. The colour is of a pale bluish white, sparingly covered with long and fine deeper lying cinereous hair-lines and overlaid patches and lines, like Arabian letters, of a deep purplish brown, more frequent on the thicker end. It measures 0·93 × 0·67 inch, and the weight of it is 250 milligramms.

The bird is sometimes kept in captivity, but is not much appreciated. Its piping notes are less clear than those of *Icterus vulgaris*, and they produce many screeching and mewing sounds. Herr Peters (J. f. O. 1892, p. 114) thinks that the Curaçao form has a different note from that of the continental *I. xanthornus*, but this seems to be imagination. I have heard the *I. xanthornus*, and both, without doubt, "speak the same language."

In the "papiamento"—the mixed dialect of Spanish, Portuguese, and Dutch spoken on these islands—this bird is called "*Trupial cacho,*" *i. e.* Dog-Trupial. On Aruba it is called "*Gonzalito.*"

The sexes in the adult bird are alike, but young birds have greenish-olive tails. They seem to retain the immature plumage for some years, as has been stated by Baird (B. N.

Amer. p. 540) to be the case with other species of *Icterus*. I dissected specimens with green tails that had swollen testes and had paired. The black tail is assumed by changing the colour, not by moult, as two of my specimens clearly show.

7. Icterus icterus (Linn.).

Oriolus icterus, Linn. Syst. Nat. i. p. 161 (1766).

Icterus vulgaris, Daud. Tr. d'Orn. ii. p. 430; Scl. Cat. B. B. M. xi. p. 382.

Icterus vulgaris (subsp.?), Peters, J. f. O. 1892, p. 114 (Curaçao).

Peters (*l. c.*) says that this bird occurs on Curaçao, and is said to be paler than the continental form. After carefully comparing my specimens with those in the British Museum, I must say that my birds, on the contrary, have very bright colours, and that they are indistinguishable from the continental *Icterus icterus*. My specimens are rather short-winged, but those from Santa Marta in the British Museum are quite similar. An example from Carupano is a good deal larger, but there are others intermediate. A specimen from an unknown locality in H. v. Berlepsch's museum has white spots on the outer rectrices, and one from Carthagena is rather paler than my birds.

♂ ad. sect. Aruba, 27 vi. Total length about 9 inches, wing 4·4, tail 4, tarsus 1·2, culmen 1·28.

♀ ad. sect. Aruba, 27 vi. Total length about 9 inches, wing 4·3, tail 3·9, tarsus 1·2, culmen 1·3.

♂ sect. Curaçao, 2 viii. Total length about 9·5 inches, wing 4·35, tail 4, tarsus 1·3, culmen 1·37.

♀ sect. Curaçao, 2 viii. Total length about 8·75 inches, wing 4·15, tail 3·9, tarsus 1·25, culmen 1·24.

My specimens are in a somewhat worn plumage. I did not find any nests; but, as everybody on Curaçao knows, they are totally different from those of *Icterus xanthornus* in not having the long tube.

This bird is much appreciated as a cage-bird on account of its pure flute-like notes, and is often sent for sale from Venezuela.

This species is not rare in certain places, such as the rocky hills covered with brushwood and cactus, both on Aruba and Curaçao, but it is absent from Bonaire, thus indicating its immigration from the continent. I saw it in the bush on St. Thomas, where it has already been stated to occur by Ridgway. It may have been introduced into that island; but, on account of other affinities between the ornis of St. Thomas and that of Curaçao, this is very questionable.

8. MYIARCHUS BREVIPENNIS, Hartert, Bull. B. O. C. iii. p. xii; id. Ibis, 1893, p. 123.

I have compared this new insular form of *Myiarchus* with specimens in Berlepsch's museum and with the fine series in the British Museum, and find that it is closely allied to *Myiarchus tyrannulus* (*cf.* Scl. Cat. B. B. M. xiv. p. 251), but readily distinguishable from it by its shorter wings and tail, longer tarsus, the more olive-greyish and less brownish colour of the upper parts, and the blackish lower mandible, which in *M. tyrannulus* is pale brown.

It is remarkable that in Venezuela the true *M. tyrannulus* occurs, and that the Island of Grenada is inhabited by another species, *M. oberi*, Lawr. Sclater (*l. c.*) has united *M. oberi* with *M. tyrannulus*; but the specimens now in the British Museum and in Berlepsch's collection show that *M. oberi* is a very distinct species. It differs in the much greater extent of the rusty colour on the inner webs of the rectrices, decidedly darker upper surface, longer bill, and longer wings and tail, thus pointing more to *M. mexicanus* in its size, but not in the colour of the back. Specimens from the three islands Aruba, Curaçao, and Bonaire are quite similar. Total length about 7·3 inches, wing 3·4 to 3·59, tail 3·3 to 3·5, culmen 0·7 to 0·8, tarsus 0·75 to 0·85.

9. SUBLEGATUS GLABER, Scl. & Salv. P. Z. S. 1868, p. 171, pl. xiii. (Caracas); Berl. J. f. O. 1892, p. 84 (Curaçao).

Not very rare.

10. TYRANNUS DOMINICENSIS (Gm.).

This bird seems to be very rare on Aruba, where I did not obtain it, but once saw a pair That this species is rarest on

Aruba and more common on the other islands seems to point to the fact that it is a West-Indian form.

11. Chrysolampis mosquitus (Linn.).

Common on flowering trees. While on Curaçao in the beginning of June these birds were in moult, and it was impossible to obtain males in good plumage: they began to get out of their moult by the end of my stay on Aruba.

When I met with this beautiful Humming-bird I did not know there was any question to settle about it, and did not pay especial attention to it. I did, however, collect a series of fine adult males, and, chiefly owing to the efforts of my wife, eight specimens in dull plumage, all well skinned and dissected. In looking over Mr. Salvin's description in the Cat. B. xvi. p. 114, I find the adult female described as having the lateral tail-feathers bronzy black, but my skins contravene this statement. According to my series *the adult female has the rectrices chestnut-red, with a broad subterminal band of a purplish steel-blue, and tipped with white*. They appear to have sometimes, if very aged, some glittering feathers along the middle of the throat. The young of both sexes—according to my collection—have the tail purplish black, and I have (in my own collection and among a number of trade-skins) many intermediate stages. Gould and Lesson have both figured the females as they really are, with the red tail. As regards the name, it should be written *mosquitus* and not *moschitus*, as shown before by Berlepsch. Linnæus in his Syst. Nat. ed. x. p. 120 (1758), as well as in ed. xii. p. 192 (1766), wrote it *mosquitus*, and it was only changed to *moschitus* by Gmelin. Linnæus very probably meant to designate it a small mosquito-like bird.

12. Chlorostilbon caribæus, Lawr. Ann. Lyc. N. H. New York, x. (1874) p. 13.

Not rare, but rather less common than the foregoing species. Badly in moult. Berlepsch has shown (J. f. O. 1892, p. 87) that the name *C. atala* of Lesson is very doubtful, and that the acceptance of Lawrence's name is advisable.

13. Conurus arubensis, Hartert, Bull. B. O. C. iv. p. xvi (1892).

Adult male and female. Forehead pale yellow for about 0·3 inch; top of the head distinctly tinged with blue; circle round the eyes very narrow above, broader below, pale orange-yellow; lores, cheeks, and sides of the head mixed light brown and very pale orange-yellow, the feathers, especially those on the ear-coverts, being yellowish in the middle and bordered with brown; throat and upper breast yellowish brown. Of the same size as *Conurus æruginosus*, but tail longer as a rule.

This form of *Conurus* is closely allied to *C. æruginosus* from Guiana and Venezuela, from which it differs only in the lighter colour of the forehead, sides of the head, and throat, and I believe also in a somewhat longer tail. As my four specimens from Aruba differ in these points from nine skins from British Guiana in Mus. W. Rothschild, from all the skins from different localities in the British Museum, and from skins from Venezuela in Mus. H. v. Berlepsch, I believe I am right in distinguishing it as a new island form.

♂ sect. Aruba, 22 vi. Iris straw-yellow; bill horn-brown; feet deep brown. Total length 9·7 inches, wing 5·3, tail 4·9, culmen 0·9, tarsus 0·5.

♂ sect. Aruba, 23 vi. Iris pale yellow. Total length about 9·6 inches, wing 5·3, tail 5·1, culmen 0·95, tarsus 0·5.

♀ ad. sect. Aruba, 2 vii. Wing 5·1 inches, tail 4·85, culmen 0·85.

♂ ad. sect. Aruba, 2 vii. Wing 5·45 inches, tail 4·9, culmen 0·78.

In fifteen specimens of *C. æruginosus* from Guiana and Venezuela the tail measures 4·25 to 4·6 inches, the wing 5·3 to 5·65, the culmen 0·85 on the average. In Salvadori's description (Cat. B. xx. p. 196) the length of the bill is given as 0·28, which is evidently a misprint for 0·78 or 0·88.

Conurus arubensis might, on account of its somewhat yellowish sides of the head, be looked upon as a form intermediate between the continental *C. æruginosus* and *C. pertinax* from Curaçao and St. Thomas. To those naturalists who unite these two forms, this statement may appear to be a rather bold one. But it is not wrong to say that those who cannot distinguish between *C. pertinax* and *C. æruginosus* are not well acquainted with these birds. I myself did not know them when, two years ago, in my 'Katalog Vogels. Mus. Senckenberg.' (p. 156), I ventured to unite the two species, having been (like Finsch, Schlegel, and others) misled by young specimens of *C. pertinax* and by inexact localities, so that the distribution could not be studied.

With more material at hand it might not be wrong to regard this new form as a subspecies of *C. æruginosus*, as it is close to it, and specimens might easily be found that very nearly approach it, but I prefer to keep it as a species, all the more on account of its isolated habitat.

C. arubensis is very common everywhere on Aruba. The first morning when out shooting with my friend Dr. Cole, I obtained a specimen of it. Thinking that it was the common continental form, I was content to pick up a specimen occasionally, and brought home four skins only. My much honoured friend, Count Tommaso Salvadori, first called my attention to the light-coloured foreheads and cheeks in my skins as soon as he saw them, and I was glad that I found the surmises of this great ornithologist well founded.

C. arubensis is similar in its habits and screaming voice to *C. pertinax*, and also lays its eggs in holes dug out in old ants' nests and trees, and in the natural caves and holes in the lime rocks. Its food consists mostly of the fruits of *Cereus*, *Melocactus*, and other plants.

14. CHRYSOTIS OCHROPTERA (Gm.).

Psittacus amazonicus gutture luteo, Briss. Orn. i. p. 287.

Le Perroquet à épaulettes jaunes, Levaill. Perr. pls. 98, 98 bis.

Chrysotis ochroptera, Reichen. Vogelb. pl. i. fig. 5; Salvad. Cat. B. B. M. xx. p. 288.

Chrysotis canifrons, Lawr. Ann. N. Y. Acad. Sci. ii. p. 381 (1883) (Isl. of Aruba); Salvad. Cat. B. B. M. xx. p. 272 (note).

This beautiful Amazon, of which, in spite of the numbers that are kept in confinement, specimens procured in a wild state are so rare in museums that its habitat could only be given with a query in Salvadori's Catalogue of the Parrots (*l. c.*), inhabits the Island of Aruba. It might not be out of place here to state that it is also common in the lowland forests of the district of Coro, and in other parts of Venezuela, whence large numbers are sent to the bird-shops of the larger towns of Venezuela and to Curaçao.

I procured three adult males of this fine bird. They are very bright-coloured, forehead and lores white with a faint ashy hue, the greater part of the top of the head, and in all three specimens some of the feathers on the neck also, rich yellow with rosy-orange bases; the entire sides of the head and chin of the same colour, corresponding with Brisson's description and Levaillant's very good figure. The whole of the cubital edge, the bend of the wing, and nearly all of the lesser wing-coverts bright yellow ("épaulettes jaunes" of Levaillant); thighs bright yellow with a rosy tinge at the bases of the feathers; bill whitish horn-colour; iris orange-red, shading into orange-yellow inwards; feet dark grey. My specimens are coloured thus, but in captivity these birds often besmear the forehead with dirt, as many also do in a wild state with the sticky juice of the fruits of *Cactus*. In European Museums, where all or nearly all the specimens are from individuals that have died in confinement, the yellow is often not so much extended. The plumage of the perfectly adult bird may perhaps never be acquired in Europe, where most specimens of this Parrot are brought when very young. In the immature bird the yellow on the head is less diffused round the eyes; the chin and cheeks are pale bluish, and probably quite blue in birds lately from the nest, the bluish colour getting more and more mixed and overspread with yellow as the bird gets older (as I observed in my live specimens from Coro that I brought home with me); bend of the wing greenish, and cubital edge not so bright yellow; thighs pale yellow; iris reddish brown.

The cubital edge is always yellow, except in its innermost corner, where occasionally a few red feathers appear. Sometimes some whitish feathers can be seen on the chin. Total length about 13·5 inches, wing 8·4 to 8·7, tail 5·3, culmen 1·4 to 1·45, height of upper mandible 0·65.

This Parrot is not rare in the more wooded and rocky parts of the island, but is somewhat shy and not easily to be obtained in numbers. It is said to breed in hollow trees. A live specimen from Coro in Venezuela in the possession of Dr. Cole was in every respect like my collected specimens, but in Europe such finely coloured birds are very seldom to be seen alive.

There can be no doubt that *Chrysotis canifrons* of Lawrence (*l. c.*) was described from an example of this species with a dirty forehead, such as I have seen in several cases. It was based on a living specimen brought to New York from Aruba, but the type has been lost. Among my specimens of *Chrysotis rothschildi* from Bonaire are several that show a somewhat ashy colour on the forehead.

15. POLYBORUS CHERIWAY (Jacq.).

Not rare on all the three islands. I have a skin from the peninsula of Paraguana, Venezuela, collected by Herr Ludwig. It is similar to one shot for me by Dr. Cole on Aruba, which I did not skin. The skin from Paraguana agrees with those from other countries. On Bonaire this bird places its nest on trees.

Local name "*Warawara.*"

16. TINNUNCULUS SPARVERIUS BREVIPENNIS, Berl. J. f. O. 1892, p. 91 (Curaçao).

The "*Kinikini*" is not rare on all the three islands. I have several specimens of both sexes, and find Berlepsch's characters constant. I agree with him in distinguishing it subspecifically—the difficulties of such forms as those of *Tinnunculus sparverius* being best met by dividing them into several subspecies. The wings of the males measure 6·5 to 6·8 inches, tails 4·9 to 5, tarsi 1·4; the wings of the females 6·5 to 6·7, tails 4·8 to 5, tarsi 1·3 to 1·4.

The rufous spotting of the crown varies much, and is usually almost or quite absent.

17. **Buteo albicaudatus colonus**, Berl. J. f. O. 1892, pp. 89 & 91 (Curaçao).

Seen, but not procured. Possibly, however, it was not this form, but the continental one.

18. **Zenaida vinaceo-rufa**, Ridgw. Proc. U.S. Nat. Mus. 1884, p. 176 (Curaçao).

Very common. Identical with examples from Curaçao.

19. **Columba gymnophthalma**, Temm.

Not rare on Aruba. Identical with specimens from Curaçao.

20. **Columbigallina passerina perpallida**, subsp. nov.

Columbigallina passerina, Berl. J. f. O. 1892, p. 97 (Curaçao).

There is hardly a bird that presents more local variation than this pretty little Ground-Dove. North-American authors distinguish between the form inhabiting the "South-Atlantic and Gulf States" and the one reaching from the South-western States throughout Mexico. The former they used to call *C. passerina*, but later on it was named *C. passerina purpurea* by Maynard, and has quite recently been renamed *C. passerina terrestris* by Chapman.

I have collected a large series from the three Dutch West-Indian Islands. All of them differ from the forms of other countries, that I have seen, in their pale colour throughout, and especially on the under tail-coverts, in the rather shorter wing, and in the base of the bill being *yellow*, not *red*. On Porto Rico and St. Thomas I shot examples of a different race, much richer and darker in colour everywhere; the base of the bill deep red, not yellow, and the wing also short.

The typical form of Linnæus's *C. passerina* must be the Jamaica bird (*cf.* Berl. J. f. O. 1892, p. 97), which, if anything, has the wing a little longer on the average than the one from Porto Rico, and stands, as regards coloration, between the pale and dark forms. The Eastern North-American bird is closely allied to this form, but it is said to have the base of the bill red, and the wing is certainly a little longer. It might therefore be distinguished subspecifically, *more Americanorum.* The Mexican pale form, however, is quite distinct, and the rich-coloured birds from Porto Rico deserve attention. The latter correspond with Ridgway's description of *C. passerina socorrensis*, but are probably distinct from it. The form from Grand Cayman described as *C. passerina insularis* is probably the same as the true typical Jamaican *C. passerina*. My pale birds from Curaçao are in colour nearest to the Mexican bird, but the wings are a little shorter, the colour still a trifle paler, and the base of the bill yellow, instead of red, as it is said to be in *C. passerina pallescens* from Mexico.

All the South-American examples of *C. passerina* seem to be very closely allied to the true Jamaican *C. passerina*, although extremely variable. It is of course safer, to avoid mistakes, to unite all the forms together, but I am not prepared to do this. I have not seen Barbadian specimens, on which Bonaparte's name *C. trochila* (Consp. Avium, ii. p. 6) was based.

The Ground-Dove of Curaçao and its sister islands has the bill "deep brown at the tip, the basal portion pale orange-yellow or pale yellow, near the nostrils light yellow. Iris lilac and red. Naked ring round the eye light yellow. Feet light flesh-colour." Wing 3·05 to 3·15 inches.

This Dove is extremely common on all the three islands, and is known as "*Tortolica.*" The nest is placed in bushes and trees, but mostly on the prickly branches of the *Opuntia* or *Cereus*. It contains two eggs. I found two broods, and I was told that some of them breed in every month of the year. The eggs are of an elliptical ovate and elliptical oval form, varying into elongate ovate, occasionally ovate, and even nearly fusiform; they measure 19·6 × 15, 20 × 17, 21 × 17 to 22 × 16, 22 × 17, 23 × 17, 23·5 × 15·7, 23·6 × 16·5 to 23 × 17·5 mm.

21. Leptoptila verreauxi, Bp.

Appears to be very rare. I saw it only once in Aruba.

22. Eupsychortyx cristatus (L.).

Eupsychortyx gouldi, Berl. J. f. O. 1892, p. 100 in the text (Curaçao).

Linné's description of *Tetrao cristatus* is founded on Brisson's *Coturnix mexicana cristata* (Orn. i. p. 260, pl. xxv.). Brisson is of course wrong in his locality, but clearly figures and describes the form from Curaçao. As this island was always visited by ships, the Abbé Aubry's Museum had very likely got specimens from there. Gould (Monogr. Odontoph. p. 16, pl. ix.) figures the present bird as *E. cristatus*, but his localities are no doubt partly, if not altogether, wrong. Berlepsch (*l. c.*) has already well described his *E. gouldi*, and has pointed out in what respects it differs from *E. sonninii*. The most obvious are the black stripes above and below the ear-coverts, which never show in the species from Guiana, and the colour of the underparts. The species from Colombia (Bogotá) is, beneath, more similar to *E. cristatus*, while its head is more like that of *E. sonninii*. There can be no doubt that all three species are quite distinct.

Berlepsch had received only one skin—a female, as stated by Peters, but in the fine plumage of the adult male, as figured by Gould. My series contains but one female, and this is similar to the males in plumage, but has the ear-coverts brown and merely traces of the black stripes on the sides of the head. I believe that the female gets the black stripes when fully adult, and that Peters's statement was right, while Gould has figured young birds as females, for I have three young specimens in different stages—one male, one female, and one with the sex not determined. All these three are alike and agree with Gould's figures of the so-called females. The wings of my adult males measure from 3·9 to 4·1 inches, tarsus 1. The iris is dark brown, bill black, and feet brownish grey.

This pretty bird is not rare on Aruba and Curaçao, but is not found everywhere. The natives call it "*Socklé*," a name derived from its note, which is uttered very frequently. It is much esteemed as food, and sometimes sold in the market alive.

This bird is not easy to obtain in any great numbers without a dog, as it does not care to fly and is difficult to be seen in grassy places. It is not found on Bonaire.

I am quite sure that Gould's habitat ("Mexico") for this species is wrong, for recent explorers have not found it there; but I have reason to believe that the bird occurs in Venezuela, where *E. sonninii* is also found, but probably not in the same localities.

23. Ardea tricolor, Müll.

Not plentiful, but of regular occurrence on Aruba and Bonaire. Identical with South-American specimens, but different from the Mexican subspecies, which is spread over the West Indies. Culmen 3·65 inches, wing 9·4, tarsus 3·5.

24. Ardea candidissima, Gm.

Seen on Aruba and on Bonaire. Bill—posterior portion bluish flesh-colour, anterior half blackish horn-colour. Iris silvery white. Legs sky-blue, large scales in front of tarsus black. Total length 27 inches, wing 12, culmen 3·5.

25. Butorides virescens (Linn.).

Found on all the three islands. My specimens agree with other examples of this species, but the wings are rather shorter, measuring only 6·5 inches; culmen 2·25, tail 2·4, tarsus 1·8.

This is probably the bird called *B. striata* by Peters (J. f. O. 1892, p. 121).

26. Phœnicopterus sp. inc.

A Flamingo was seen and shot at by Dr. Cole. It is said to be rare, and a straggler only.

27. Charadrius squatarola, Linn.

I saw a few of this species and shot a male on the 24th June on Aruba.

28. Strepsilas interpres, Linn.

I saw three individuals and shot one on the 2nd July on Aruba.

29. Ægialitis rufinucha (Ridgw.).

Ægialitis wilsonius, var. *rufinuchus*, Ridgw. Am. Nat. viii. 1874, p. 109; id. Man. N. Am. B. p. 175. (*Hab.* West Indies and Atlantic coast of S. America to Bahia.)

This Plover is common, and undoubtedly breeds, on Aruba and Bonaire. I think it belongs to Ridgway's subspecies, but that it deserves specific rank. Two adult males in very fine plumage have no traces of a black band across the chest. Lores decidedly rusty. Culmen 0·83 to 0·85 inch, wing 4·45 to 4·5, tarsus 1·1.

The black band across the chest is probably always replaced in the adult male by a rusty rufous band.

30. Hæmatopus palliatus (Temm.).

I only once saw a specimen of this Oyster-catcher on the reef on Aruba and fired at it, but unfortunately missed it.

31. Totanus flavipes (Gm.).

This bird was common on Aruba on the 22nd June, when Dr. Cole shot two specimens.

32. Pelecanus fuscus, Linn.

Extremely common and not at all shy.

33. Fregata aquila (Linn.).

Schlegel (Mus. d. Pays-Bas), Oates (B. Brit. Burm.), and others are of opinion that the white-breasted specimens of this species are young birds, but Ridgway (B. N. Amer. and Man. N. Am. B.) has already well described the plumage of the adult female as well as that of the young, which has the whole head white. My male example agrees perfectly with specimens from the Pacific and Madagascar*. The females have much larger bills than the males. My specimens measure:—

♂ ad. Aruba, 3 vii. Culmen 5·2 inches, wing 23·6, tail 17.

♀ ♀ ad. Aruba, 3 vii. Culmen 5·5 to 5·6 inches, wing 23 to 24·5, tail 15·5.

34. Phalacrocorax brasilianus (Gm.).

Great flocks of this Cormorant were seen on Aruba, but were very difficult to approach.

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* Hartlaub ('Vogel Madagascars,' p. 380) mentions only *Fregata minor* from that island, but examples of both these very distinct species have been recently received by the Tring Museum from Madagascar.

35. STERNA MAXIMA, Bodd.

I have two specimens of this fine Tern, one from Aruba and one from Bonaire, but the bills and wings seem to be shorter than in *Sterna maxima* proper, and the comparative measurements of the bill do not quite correspond with those given by Ridgway in his 'Manual.' They do not, however, belong to the Pacific *S. elegans*, nor to Saunders's Atlantic *S. eurygnatha*. This specialist in Laridæ has seen one of my specimens and admitted it to be *S. maxima*, but I think that a larger series would be of interest, and might possibly lead to the establishment of a South West-Indian subspecies of *S. maxima*. The culmen in my specimens measures 2·25 to 2·36 inches, wing 13·3 to 13·6, tarsus 1·1. Iris brown, bill orange, feet black. A male and female from Georgia are similar in the form of the bill, but the latter is 0·3 inch longer, and the wings measure 14·5 inches.

This Tern is not common on these islands and is somewhat shy, but I saw it several times on the coasts of Aruba, Curaçao, and Bonaire.

36. STERNA HIRUNDO, Linn.

I have seen this Tern flying about along the coasts of Aruba and on Bonaire, and I believe also on Curaçao, but I have brought home only two skins. These agree with the European *Sterna hirundo* (= *Sterna fluviatilis* of Naumann) in appearance, but are much smaller and the bill somewhat less pointed. In fresh specimens it seemed to me that the abdomen was somewhat less greyish and of a more violet tint. I also believe that the black cap does not reach quite so low down on the neck. As my specimens have been compared with a good many skins from Heligoland, England, Morocco, and North America, which are larger, and as I have seen one skin from Southern Mexico that was entirely like my bird, I believe that it is a tropical subspecies of the Common Tern. It is also remarkable that this Tern is not regularly found south of the Bahamas, and has not yet been recorded further south than Jamaica. My specimens measure:—Culmen 1·35 inch, wing 10·1, tail 5·4, tarsus 0·7.

The North-American birds were formerly called *Sterna wilsoni*, but they are absolutely identical with European ones.

37. **Sterna antillarum**, Less.

Common on Aruba and Bonaire in places where a sandy beach offers them good breeding-grounds. I believe they had laid their eggs on Aruba at the end of June, but I did not find any. At the end of July I found half- and full-grown young ones. In coloration the young bird is similar to that of *S. minuta*, and therefore requires no description.

Iris deep brown; bill yellow, with black tip; feet yellow.

38. **Sterna dougalli**, Mont.

Cf. *Sterna dougalli gracilis*, Cory, Cat. W. Ind. B. pp. 82 & 135 (1892).

There was a large breeding-place of this Tern on the coral-reef on the coast of Aruba. The eggs are always three in number; they are deposited on the sand and on the green shore-plants which often cover the soil. The eggs vary to the same extent as those of *Sterna hirundo* and *S. paradisea* and other species of the family. The skins are in plumage identical with those from Mexico and other parts of the West Indies. Iris dark brown; bill blackish, basal half more or less orange-red; feet bright red. If there is no other character to distinguish *Sterna dougalli gracilis* but the colour of the bill, my birds might belong to that subspecies.

39. **Sterna anæstheta**, Scop.

A good many of this species were found breeding on the coral-reef off Cero Colorado on Aruba, at the same place where *S. dougalli* had its eggs. The eggs, however, were always laid in a corner under bushes, or under a stone or shell, and never placed so openly as those of *S. dougalli*. We found only one egg in each nest, and altogether not more than ten; they were all more or less set. When flying overhead the underpart of the wing and abdomen of this bird appeared beautifully tinged with greenish blue, while in the living *S. dougalli* the delicate peach-blossom colour was exceedingly pretty, but soon faded away after the birds were skinned. Iris deep brown; bill and feet black.

40. Larus atricilla, Linn.

Often seen on the coasts of Aruba, Curaçao, and Bonaire.

III. *Birds of Curaçao.*

Curaçao had been twice visited by collectors before my arrival, and two articles had been written on its birds. Ridgway (Proc. U. S. N. M. vii. pp. 173–177, 1884) enumerated 6 species. Berlepsch (J. f. O. 1892, p. 61) gave 19 species, the results of a collecting-tour made by Herr Peters, who appended to Berlepsch's admirable essay a list of 51 species supposed to occur on Curaçao. Of these 51 species, examples of 18 only were collected, and about 16 remained more or less doubtful or were founded on the erroneous information of the natives. Peters's list, however, contains some very useful field-notes, local names, and other information.

My collection contains examples of all the species that have been hitherto identified with certainty, except one*.

I am greatly obliged for much help and kindness to Mijnheer Harry Barge, the Governor of the Dutch West Indies, to Mijnheer van der Linde Schotborgh, owner of the beautiful estate of Savonet, and to the chemist, Herr Ludwig, who takes an ardent interest in the natural history of Curaçao.

1. Mimus gilvus rostratus, Ridgw. Proc. U. S. N. M. 1884, p. 137; Berl. J. f. O. 1892, p. 74; Peters, *t. c.* p. 115.

Common. See above, p. 294.

Eggs were taken in June and July, but at the same time full-grown nestlings were found.

2. Dendrœca rufopileata, Ridgw. Proc. U. S. N. M. 1884, p. 173 (type from Curaçao); Berl. J. f. O. 1892, p. 76.

I have collected a series of twenty specimens of this bird in Curaçao and Bonaire. It is equally common on both these islands, and is an inhabitant of open bushy places, as well as of mangroves and other trees. My series shows a very great variation. The adult males are bright yellow beneath; the breast, and sometimes the sides of the body, streaked with rufous; and the top of the head has a large patch of chestnut-brown. Sometimes the entire top of the head is covered with this colour, sometimes it forms a horseshoe, sometimes it is developed only on the forehead and over the eyes. It seems that as the bird advances in age the chestnut on the head and the striations on the lower parts are more developed. Quite young birds have no streaks on the breast and no chestnut on the crown. The females, as a rule, have no chestnut on the head nor streaks beneath, but sometimes indications of the stripes and of the chestnut crown are visible, and in some specimens the top of the head is spotted with chestnut and the streaks on the breast are well developed, although not so strongly as in the adult males.

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* *Ardea herodias*, Linn.

This species is very closely allied to *Dendrœca capitalis*, Lawr., from Barbados, but the chestnut on the crown is generally lighter, and the streaks on the breast are somewhat broader and not so well defined. Some specimens, however, run very close to those from Barbados.

This bird is very familiar, and known under the name of "*Para de misa*," which means "mass-bird," and often lives with great tameness in the vicinity of houses. Its song is a melodious warbling, soft and short, chiefly heard in the early morning. The nest is placed on the outer twigs of bushes, and is a tiny, very deep cup-shaped structure, composed of thin grasses interwoven with spider-webs, feathers, and hairs. I found some nests at the end of July, but did not get any eggs.

3. CERTHIOLA UROPYGIALIS (Berl.).

The nearest ally of this species is not *C. barbadensis*, as surmised by H. von Berlepsch (J. f. O. 1892, p. 77), but *C. newtoni*, from St. Croix, and *C. sancti-thomæ*. Berlepsch's new species, however, can be distinguished by the large white spot between the yellow breast and the slaty-black throat. This white spot is extremely small and scarcely indicated in *C. newtoni*, so small, in fact, that I have not found it mentioned in any description (*cf.* Scl. Cat. B. xi. p. 43). *C. newtoni* has also the uropygial band somewhat broader and of a more yellowish-olive colour. The fresh unworn specimens of *C. uropygialis* have distinct whitish edges to the longest and some of the median wing-coverts.

It is easily distinguishable from *C. newtoni* by the much darker throat, the white patch below the blackish throat, the smaller white wing-speculum, and the colour of the uropygial band. The plumage of the adult has been well described by Berlepsch (*l. c.*). The young bird is grey above, the uropygial band less developed, the crown similar to or a little darker than the back; beneath paler yellow, throat pale grey mixed with yellow, superciliary stripe yellow. In adult specimens the superciliary stripe is pure white, as a rule, but many are found with the stripe more or less tinted with yellow.

Berlepsch's Flower-pecker is extremely common on the islands. It is called "*Barica-geel*," i. e. Yellow-breast. In Bonaire, at Mr. van den Brandhof's, they came into the verandah to take milk and water and bread and fruits that were offered them on a plate.

Its song is not loud nor attractive, being a metallic warbling, frequently repeated.

The nest is a large ball of dry grasses and leaves, lined with feathers, and with a lateral entrance. It is placed mostly at the tips of branches at different heights from the ground. One, from which I took eggs, was built in a flower-basket hanging from the ceiling of Señor Ricardo's verandah in Curaçao. The eggs were fresh, but the bird had left them.

The eggs are four in number, of a whitish colour, more or less thickly covered with darker and paler rufous spots and patches. Their average size is 0·6 × 0·45 inch.

4. **Ammodromus savannarum** (Gm.).

Very rare on Curaçao, and only met with near Beekenburg, in a stony valley of grass and low bushes. Not previously recorded from Curaçao.

5. **Zonotrichia pileata** (Bodd.); Berl. J. f. O. 1892, p. 82.

Local name "*Chonchorrongai.*"

As a rule specimens of this bird from Curaçao are rather pale, but this character is not constant. It does not build closed nests, as suggested by Herr Peters (J. f. O. 1892, p. 115), but open ones, like other species of this genus. I found two eggs at the end of July. They are of a very pale-blue colour, regularly spotted with rufous. They measure 0·8 to 0·6 inch.

6. **Euetheia sharpei**, Hartert.

Euetheia bicolor, Berl. J. f. O. 1892, p. 81; Peters, t. c. p. 116.

Euetheia sharpei, Hart. Bull. B. O. C. vii. p. xxxvii.

Of all the birds that I collected on my West-Indian trip, those of the genus *Euetheia* (or *Phonipara*, as it is termed by Dr. Sharpe and others) are the most puzzling. After a careful comparison of all the materials at hand, I came to the following conclusions, and I believe that those ornithologists who have sufficient evidence to form an opinion will agree with me.

(1) Dr. Sharpe is correct in retaining as a separate subspecies *E. marchi*, notwithstanding that Mr. Cory has united all the West-Indian *Euetheiæ*. A fine additional series from San Domingo has arrived at the British Museum since the publication of the twelfth volume of the Catalogue. I think it will speak well for the distinctness of *E. marchi* when I say that, on a dark December day in London, I was able to pick out in a minute all the males of *E. marchi*, without mistake or hesitation, from the box containing *E. bicolor*, in which they had been provisionally placed. Besides the characters given by Dr. Sharpe in the 'Catalogue of Birds,' *E. marchi* evidently has the bill of a much lighter brown.

(2) The distribution of the two forms, *E. bicolor* and *E. marchi,* as given by Dr. Sharpe cannot be maintained. There is no doubt that the *Greater Antilles,* Jamaica, San Domingo (and Porto Rico?) are inhabited by *E. marchi,* but Dr. Sharpe was misled by insufficient materials into including St. Thomas in its range. I have shot several males on St. Thomas, which clearly show that this island is tenanted by *E. bicolor* proper, the same as the Bahaman form, which is the typical one. Dr. Sharpe now agrees with me that the bird from St. Thomas is *E. bicolor,* and not *E. marchi*; he further writes me that the only male from Santa Lucia in the British Museum is a badly made-up skin and difficult to determine, although it looks somewhat like *E. marchi.* The Barbadian bird, singularly enough, is, in Dr. Sharpe's opinion, *E. marchi,* while the other islands of the Lesser Antilles are inhabited by *E. bicolor.* This seems very curious, but the outlying island of Barbados differs geologically and zoologically in many respects from the Lesser Antilles (*cf.* Feilden, Ibis, 1889, p. 478); therefore it is not very remarkable that Barbados should have a different form of *Euetheia,* but possibly additional materials might show that it is not the same as *E. marchi*—unless it has been introduced, which is not likely, as it is so common on that island.

(3) A series of skins from Aruba, Curaçao, and Bonaire belongs to neither of these two forms. Berlepsch (J. f. O. 1892, p. 81) first pointed out the differences of this new form, but having received only one male he did not know whether these differences were constant or not. I have named it *E. sharpei,* in honour of Dr. Sharpe and his work on the Fringillidæ.

(4) The birds from Venezuela and Tobago are similar *inter se,* but differ slightly from the Bahaman form, to which they are most nearly allied. These therefore must stand as *E. omissa* (Jardine) (type *ex* Tobago).

(5) It might, on account of the close relationship of these forms, the not yet sufficiently defined distribution of them, and the possibility of the occurrence of intermediate forms,

be more convenient to treat them as subspecies; but I think that, as a rule, insular forms, which, on account of their isolation are not likely to interbreed or produce intermediate forms, should be regarded as species rather than as subspecies, even if the differences be small.

(6) Linnæus, in 1758, named Catesby's "Bahama Sparrow" *Fringilla zena*, but afterwards transferred this name to another member of his large group *Fringilla*—the *Spindalis zena* of the present epoch—and renamed the "Bahama Sparrow" *Fringilla bicolor*. According to the law of priority, both birds should bear the specific term "*bicolor*," which could not cause any inconvenience, the one being a member of the Fringillidæ and the other of the Tanagridæ.

(7) The females of all these forms are similar, and to be distinguished only with the greatest difficulty.

The "*bicolor*"-group of the genus *Euetheia* consists therefore of the following species or subspecies:—

(1) EUETHEIA BICOLOR (Linn.).

♂. Forehead and crown dingy black, gradually shading off into the dusky olive of the back. Black of breast extending down along the abdomen. Bill blackish brown. Wing 1·9 to 2·05 inches.

Hab. Bahamas and most of the Lesser Antilles, accidentally in Southern Florida.

(2) E. MARCHI (Baird).

♂. Above similar to *E. bicolor*, but the black on the underparts much less extended, abdomen paler and without black. Bill paler brown. Wing 2·05 inches.

Hab. Jamaica, San Domingo (Barbados ?).

I have not seen specimens from Porto Rico, but they probably belong to this species.

(3) E. SHARPEI, Hartert.

♂. Beneath similar to *E. bicolor*, but the black above confined to the forehead and sides of the head; back and rump paler, a little more shaded with greyish; the black of the breast somewhat less deep and duller. Wing 2 to 2·15 inches.

Hab. Aruba, Curaçao, and Bonaire.

(4) E. omissa (Jardine).

Similar to *E. bicolor*, but the wing longer and the colour of the back and rump deeper and more of a greenish olive. Wing 2·15 to 2·2 inches.

Hab. Venezuela, extending north to Tobago and parts of Colombia.

E. sharpei is very common on Curaçao. Its nest is a large ball of grass with a lateral entrance. All that I saw were placed in the prickly branches of the *Opuntia* and *Cereus*. I found from three to four eggs in the nest, which are whitish, with a very faint bluish hue, much speckled with rufous, and with a few deep brown spots. They measure from 0·65 x 0·46 to 0·7 x 0·5 inch.

7. Icterus xanthornus curaçaoensis (Ridgw.); Berl. J. f. O. 1892, p. 82.

Icterus curaçaoensis, Ridgw. Proc. U. S. N. M. 1884, p. 174.

Not rare.

8. Icterus icterus (Linn.).

Icterus vulgaris, subsp.? Peters, J. f. O. 1892, p. 114.

Not numerous, but well known. Colours of Curaçao specimens very bright. Cory (Cat. W. Ind. B. p. 146) says the same of examples obtained in St. Thomas.

9. Hirundo erythrogastra (Bodd.); Peters, J. f. O. 1892, p. 117.

I saw a specimen that was skinned by Herr Ludwig, and which undoubtedly belonged to this species. I think it is only a visitor from the north, because Peters tells us that it was numerous at the end of August, while it was so rare during my visit that I only saw a few in the town and was not able to procure a specimen.

10. Elainea martinica riisii (Scl.).

Elainea riisii, Scl. P. Z. S. 1860, p. 314.

Elainea martinica, Scl. Cat. B. B. M. xiv. p. 141; Berl. J. f. O. 1892, p. 85 (Curaçao).

I procured three specimens of this bird on Mt. Christoffel, but did not see it anywhere else. Mrs. Hartert thinks she saw it on Bonaire, but no specimen was obtained. My skins are in better plumage than those collected by Herr Peters, but are also somewhat worn. They entirely agree with specimens from St. Thomas. Specimens from Guadeloupe and Dominica are slightly different, and it is advisable to recognize Sclater's *E. riisii* (afterwards, in the 'Catalogue of Birds,' united with *E. martinica* by the same author) as a subspecies.

This is another instance of Curaçao not having the continental form, but the West-Indian one, and also of a nearer relationship to the St.-Thomas avifauna than to that of the other Lesser Antilles.

11. Myiarchus brevipennis, Hartert, Bull. B. O. C. iii. p. xii.

Not very rare near Savonet and in other well-wooded places.

(Peters says (J. f. O. 1892, p. 118) that he saw a rather large species of Tyrant through his glasses. From his description it cannot be any of those that are as yet known from Curaçao.)

12. Sublegatus glaber, Scl. et Salv.; Berl. J. f .O. 1892, p. 84 (Curaçao).

My specimens of this bird agree with the type from Caracas (Venezuela) in the British Museum. It occurs on all the three islands and is not rare, but is by no means common. The wings of my eight specimens measure 2·58 to 2·8 inches, mostly 2·6 and 2·65 inches.

This species can be distinguished without difficulty from *Sublegatus platyrhynchus* from Bahia, Brazil.

13. TYRANNUS DOMINICENSIS (Gm.); Berl. J. f. O. 1892, p. 86.

H. v. Berlepsch raised the question whether the birds of Curaçao belong to the typical form of *Tyrannus dominicensis* from the Greater Antilles or to the large-billed *T. rostratus*, Scl., from the Lesser Antilles. I have collected a series sufficient to show that they belong to the true *Tyrannus dominicensis*.

This bird has the same name which it or its allies have almost everywhere in the West Indies and South America, "Pitirri" or "Pipirri." Its note, indeed, is exactly like its name. It is common on Curaçao, especially near Savonet, and may even be seen in the outskirts of Willemstad.

Sclater (Cat. B. xiv. p. 271) calls it *Tyrannus griseus*, but I agree with Berlepsch and others that Gmelin's *Lanius tyrannus β dominicensis*, given with habitat and distinguished by description, should provide it with a name.

14. CHRYSOLAMPIS MOSQUITUS (Linn.); Berl. J. f. O. 1892, p. 86.

Not rare on flowering trees and on the flowers of the aloe, but less common than the next species.

15. CHLOROSTILBON CARIBÆUS, Lawr.; Berl. J. f. O. 1892, p. 87.

The type of *C. caribæus* came from Curaçao. The specimens are indistinguishable from those from Venezuela (generally called *C. atala*). The nest is a tiny structure built on a small twig. I obtained two eggs from Herr Ludwig. They are oval in shape, and in colour plain white without gloss. They measure 0·4 × 0·29 inch, and weigh 17 milligramms.

16. STENOPSIS CAYENNENSIS (Gm.); Berl. J. f. O. 1892, p. 87.

Unfortunately I was not able to get an adult male, but only a female and two young birds of this Nightjar. When comparing my specimens with those in the British Museum, I was unable to find any differences. The bird breeds on

Curaçao and Bonaire, but I did not see it on Aruba. It is not common, and is mostly found in dry and stony places with scanty vegetation.

17. CROTOPHAGA SULCIROSTRIS, Sw.

Not previously recorded from Curaçao.

I met with several of these birds near Savonet, and procured a few specimens. Its occurrence so far eastwards is very remarkable. I believe that it is resident on Curaçao. The stomach contained grasshoppers. Iris deep brown. Bill and feet black.

18. CONURUS PERTINAX (Linn.); Salvad. Cat. B. B. M. xx. p. 197; Berl. J. f. O. 1892, p. 88; Peters, J. f. O. 1892, p. 112.

Berlepsch (*l. c.*) gives his opinion that, on account of the peculiar fact that *Conurus pertinax* occurs on the two islands of Curaçao and St. Thomas, and apparently nowhere else, it is quite possible that its original home is Curaçao, where it seems to be more common than on St. Thomas. There are, however, other birds that occur on both these islands, so that I hesitate at present to accept this introduction-theory. On St. Thomas this lovely Parrakeet is restricted to the hills on the eastern side of the harbour (*cf.* A. & E. Newton, Ibis, 1859, p. 374), and at the present time it is said to be so rare that they are no longer caught for sale, while formerly they were brought to the steamers by the negroes. On Curaçao it is very numerous in the western parts of the island, but not so common, although by no means rare, in the eastern. The nests are mostly built in the large ants'-nests placed in trees, into which they dig holes.

The negroes take the young ones from the nests and keep them in cages. Large numbers are sold to the sailors.

The plumage of the adult bird is well described by Salvadori, but the descriptions of Finsch and many others are confusing, as they do not distinguish between *C. æruginosus* and *C. pertinax*. In the young of *C. pertinax* little of the beautiful orange-colour on the cheeks, which are brownish, is to be seen; the forehead is tinged with greenish and brownish, and the throat and upper breast are more tinged with greenish than in the adult bird. The orange-colour gradually spreads over the sides of the head from the lores and region under the eyes, and is assumed not by moult only, as some of my skins, as well as my observations on two living specimens that I brought home with me, clearly show. The bill in the adult bird is deep horn-brown, while in younger specimens the upper mandible is more or less pale and whitish. The sexes are quite similar.

19. BUTEO ALBICAUDATUS COLONUS, Berl. J. f. O. 1892, p. 91.

This name was proposed by Berlepsch for the Buzzard of Curaçao, of which he had a single young bird, probably in first plumage. Unfortunately I was unable to get an adult specimen of this bird, but I obtained a young male from Herr Ludwig and shot a young female on Bonaire. Both these specimens are quite similar to the one that is minutely described by H. v. Berlepsch, and the differences from the young of *Buteo albicaudatus* from other countries seem to be constant and well marked. I have seen the adult bird sailing over and around Mt. Christoffel on Curaçao, and twice on Aruba, but had no chance of shooting one. The iris in the young is brown, feet yellow, cere pale greenish. In the stomach I found the remains of small birds, and the natives on the islands say that it is very destructive to fowls. Native name "*Pata-lejo.*" The wings of my two specimens measure 15·1 and 15·2 inches, the tarsus 3·2.

The adults when flying high in the air looked like the continental species, but will probably turn out to be distinct.

20. TINNUNCULUS SPARVERIUS BREVIPENNIS, Berl. J. f. O. 1892, p. 91.

Not rare.

21. POLYBORUS CHERIWAY (Jacq.); Peters, J. f. O. 1892, p. 110.

Not rare.

22. **Strix flammea bargei**, Hartert, Bull. B. O. C. iii. p. xiii; id. Ibis, 1893, p. 124.

Face white, a dark brown spot in front of the eye. Upper surface the same as in most of the European specimens. Beneath white, sparsely spotted with dark brown. Tail pale greyish isabelline, spotted with dark grey, and with four distinct blackish bars. Iris deep brown. Bill whitish flesh-colour, toes brown, claws deep brown. Total length about 12 inches, wing 9·7, tail 4·3, tarsus 2·2.

This insular form is entirely different from the Barn Owls of the West Indies, and also from the South-American form. In colour it is similar to many specimens from Europe, and also to some from the Pacific Islands, but in its small size it is only to be compared with the Galapagos species, which, however, is of an entirely different colour. I have only one specimen, which was caught for me by order of Mijnheer Harry Barge, Governor of the Dutch West Indies.

This Barn Owl is said to be not very rare in some of the rocky parts of Curaçao. Two specimens sent by Herr Ludwig agree with my own.

I do not know whether this Owl occurs on Aruba, but there appears to be another species of Owl on that island of only about half the size of it, and of an ashy colour. There is said to be another Owl on Curaçao, but of what kind I do not know.

23. **Columba gymnophthalma**, Temm.; Hartert, Bull. B. O. C. iii. p. xii; id. Ibis, 1893, p. 123.

Although there are examples of this Pigeon in the Museums of Paris and Leyden, and one stuffed specimen in the British Museum, neither its exact habitat nor anything of its life-history was known, and it has been several times confounded with *Columba picazuro* from Brazil, for instance by Herr v. Pelzeln (Orn. Bras. p. 274).

It was first described in 1811 by Temminck in Madame Knip's work, 'Les Pigeons,' on p. 48, and the figure (pl. xviii.) clearly represents this species, although the granulated bare orbital space and the thighs are wrongly coloured, and the belly and under tail-coverts are much too dark.

It was observed and noticed on Curaçao by E. Peters (J. f. O. 1892, p. 112) under the local name "*Ala blanco*" (not "*blanca*," as Peters spells it), but specimens were not preserved, and the species was not identified.

In the living bird the bill is of a whitish flesh-colour, the iris deep orange-brown. Round the eye is a smooth bare ring of a bluish-grey colour; this ring is surrounded by a large granulated naked space of a dark reddish-brown colour, somewhat like an over-ripe strawberry. Feet raspberry-red. The lower surface of the bird is vinaceous grey, shading into ashy on the flanks and belly. Thighs and under tail-coverts greyish white. The broad white line along the wing has caused this bird to be named "*Ala blanco*," or "White-wing," on these islands. I have five adult males and one young female. The latter has only an indication of the granules round the eye, and the beautiful scaly-looking white and blackish borders on the hind neck, and pale vinous and blackish borders to the feathers between the shoulders, are only slightly indicated, but this seems to be due rather to the immaturity of the specimen than to its sex.

The total length of the adult males is about 13 inches, the wing measures from 7·55 to 7·85, tail about 5·3, culmen 0·65, tarsus 1 to 1·1, middle toe 1·2 to 1·26.

This species is not rare on Aruba, and is common in some localities on Curaçao, where there are many trees; it is also common on Bonaire. According to Herr Peters it likewise occurs on the coast of Venezuela, where it is called "*Manglera*," but this statement requires confirmation.

This beautiful Pigeon generally flies about in flocks, picking up its food from the ground as well as from the trees. Its note is a deep cooing, consisting of four sounds. I found a fresh-made nest on the 23rd July, but no eggs in it. I also shot young birds at this time, so I believe that they breed twice during the year. The nest is a loose structure, like that of *Columba palumbus*, and placed mostly in the mangroves, but sometimes in other trees. They are rather shy birds, but can be shot in great numbers in very dry weather near the water. The Europeans and natives on the islands much appreciate its flesh as food, and it does well in captivity.

24. ZENAIDA VINACEO-RUFA, Ridgw. Proc. U. S. N. M. vii. p. 176; Berl. J. f. O. 1892, p. 95.

Extremely common on Aruba, also common on Curaçao, but most numerous on Bonaire. Peters (J. f. O. 1892, p. 113) mentions this species under three names—No. 13. "*Ala duro,*" No. 14. "*Blauw Duiff,*" and No. 15. "*Patruchi.*" All three names apply to *Zenaida vinaceo-rufa*. "*Ala duro*" is the most familiar name for the adult bird; "*Patruchi,*" a name that is by some of the islanders erroneously applied to *Eupsychortyx gouldi*, is less in use; and "*Blauw Duiff*" is the Dutch name, mostly given to the young bird, which many natives believe to be a distinct species. *Columba portoricensis* is sometimes called by the last name on Bonaire.

The young bird is more rusty above and beneath than the adult, most of the feathers have white edges and white lanceolate spots at the tips. The females are much darker in colour.

Wing of adult 5·2 to 5·5 inches. I found the nest—a flat and loose structure, like all Pigeons' nests—about 10 feet high in a dividivi-tree. The two eggs are ovate in shape (*cf.* Ridgw. Nomencl. Col. pl. xvi. fig. 1), and in colour plain white, with a faint gloss. The weights are 460 and 455 milligramms, and they measure 1·23 × 0·86 and 1·1 × 0·84 in.

25. LEPTOPTILA VERREAUXI (Bp.).

My honoured friend Count Tommaso Salvadori has kindly examined some of my skins of this bird, and refers them to *L. verreauxi*. The species is rather rare on Curaçao.

Wing 5·4 inches. Iris pale orange or yellowish brown, bill black, feet red.

I believe this to be Peters's No. 11 (J. f. O. p. 113), for the islanders call it "*Tortel Duiff,*" and there is no such thing as *Columba plumbea* on Curaçao.

26. Columbigallina passerina perpallida, Hartert.

See above, p. 304.

Extremely common.

27. Eupsychortyx cristatus (L.).

See above, p. 305.

Not rare. Often kept in confinement and sold for food.

28. Ardea herodias, Linn.; Ridgw. Proc. U.S. Nat. Mus. 1884, p. 177.

Messrs. Benedict and Nye have obtained examples of this species on Curaçao. I did not shoot it, but once saw a huge Heron near Savonet at sunset, which I think belonged to this species.

29. Ardea candidissima, Gm.

White Herons are of irregular occurrence on Curaçao, and as I shot *A. candidissima* on Aruba, I suppose that they belong to this species.

30. Butorides virescens (Linn.).

See above, p. 307.

I saw this bird several times on Curaçao.

31. Totanus macularius (Linn.).

Actitis macularia, Peters, J. f. O. 1892, p. 120.

I saw a few of these birds on the Schottegatt, but did not shoot any.

32. Himantopus mexicanus (Müll.); Peters, J. f. O. 1892, p. 121 ("teste Ludwig").

Flocks of old and young of this Stilt were seen in June on the lagoon of Savonet. The immature birds were very young indeed, and were probably bred on the island. The wing of my adult male measures 8·8 inches, bill 2·65, tarsus 4·5; female adult, wing 8·4, bill 2·66, tarsus 4. Iris bright red; bill black; feet coral-red. In young birds the feet are paler, the iris somewhat dull red, and the bill grey.

33. Hæmatopus palliatus (Temm.); Peters, J. f. O. 1892, p. 121.

Herr Ludwig has seen and shot examples of this species.

34. **PELECANUS FUSCUS**, Linn.

Occasionally seen on the coast.

35. **FREGATA AQUILA** (Linn.).

Occasionally seen on the coast or sailing over the island.

36. **PHALACROCORAX BRASILIANUS** (Gm.).

Peters (J. f. O. 1892, p. 122) mentions that he saw a Cormorant which can hardly belong to any other species than this.

37. **STERNA MAXIMA**, Bodd.

See above, p. 309.

A few of these Terns were seen on the coast.

38. **STERNA HIRUNDO**, Linn.

A few Terns belonging to this species (or to *S. dougalli*, see above, p. 310) were seen on the Schottegatt and near Beekenburg.

39. **LARUS ATRICILLA**, Linn.

Seen on the harbour of Curaçao.

IV. *Birds of Bonaire.*

Bonaire, the most oceanic island of the three, is generally more wooded than the other two, although some parts of it are very bare.

Nothing has yet been published on the birds of Bonaire. Professor Martin, who stayed on the island for five days only, mentions that he saw *Columbigallina passerina* and a *Conurus* different from that of Aruba, as also from *C. pertinax*, and it will be seen that his surmise on this point was correct. We also know that Dr. A. A. Julien informed Mr. Lawrence that the *Chrysotis* of Aruba, which was described by the latter as *C. canifrons*, was common on Bonaire. It will be seen, however, that it is not the same, but an allied species.

I am obliged to several residents of Bonaire, above all to our kind host Mijnheer van den Brandhof, the Dutch Official of Bonaire, to Mijnheer Boyé, and Mijnheer Hachett, for much assistance during our visit to this island.

1. Margarops fuscatus (Vieill.).

This typical West-Indian bird was common in the gardens near Fontein, on the north-east coast of Bonaire, but I saw it nowhere else. I have compared my skins with specimens from the Bahamas, Haiti, Porto Rico, and St. Thomas, and am not able to distinguish between them. My specimens are somewhat pale, but all are in, more or less, worn plumage, and there are quite similar ones from the Greater Antilles in the British Museum.

These "Tjutjubis" are peculiar birds, running and hopping quickly through the foliage, and sometimes making a great noise by chattering, warbling, and whistling together. They are, I believe, entirely fruit-eaters, for I did not find anything else in their stomachs, and are destructive to the fruits of the date-palms, of the *Carica papaya*, and other trees. They are so fond of the papaya-fruits that they used to come through the lattice of the window into the room when we had these fruits on the table and soon made away with them. The native name is "*Tjutjubi spagnol.*"

Iris yellowish white in adult birds, brown in the young ones; bill brownish horn-colour; feet light brown.

The occurrence of this species here is remarkable, especially as another subspecies, *Margarops fuscatus densirostris* (Vieill.), is found on the Lesser Antilles.

2. Mimus gilvus rostratus, Ridgw.

Common.

3. Dendrœca rufopileata, Ridgw.

Very common.

4. Certhiola uropygialis (Berl.).

Extremely common.

5. Ammodromus savannarum (Gm.).

Common in grassy places on "Aruba-Estate," near Kralendijk, on Bonaire. It is called "*Raton de cero,*" or "*Para de cero.*" A series of skins of this species agree best with specimens from Jamaica, which are typical *A. savannarum*, and cannot be separated from them. The wings of the Aruban specimens measure 2·05 to 2·2 inches, tarsus 1·7.

The occurrence of this species here is very remarkable. Cory (Cat. W. Ind. B. p. 112, 1892) only gives Jamaica, Cuba, and Porto Rico as its habitats.

6. Euetheia sharpei, Hartert.

Very common. See above, p. 314.

7. Icterus xanthornus curaçaoensis (Ridgw.).

Rather scarce on Bonaire.

8. Myiarchus brevipennis, Hartert.

Not rare. See above, p. 318.

9. Sublegatus glaber, Scl. et Salv.

Not rare. Called on Bonaire "*Para stranjero.*"

10. Tyrannus dominicensis (Gm.).

Not rare, but perhaps less numerous than on Curaçao. Native name "*Pitirri.*"

11. Chrysolampis mosquitus (Linn.).

Common. In the middle of July most of the specimens, but not all, had passed through their moult.

12. Chlorostilbon caribæus, Lawr.

Common. Most of the specimens were still in moult, but a few very fine ones were shot.

13. Stenopsis cayennensis (Gm.).

Rare. Native name "*Para de noche.*" See above, p. 319.

14. Chrysotis rothschildi. (Plate IX.)

Chrysotis rothschildi, Hartert, Bull. B. O. C. iii. p. xii; id. Ibis, 1893, p. 123.

The Amazon of Bonaire is allied to *Chrysotis ochroptera* from Venezuela and Aruba, but may be distinguished from it by the following characters:—

(1) Instead of the entire sides of the head being yellow (as in the adult *C. ochroptera*), only the anterior part of the crown, the space round the eyes, and the ear-coverts are yellow, and the green colour reaches up to, or nearly to, the lower mandible right and left of the chin.

(2) While in adult specimens of *C. ochroptera* the chin and entire throat are rich golden yellow, in *C. rothschildi*

no yellow feathers are to be seen on the throat, and only a few scanty feathers on the upper chin are of a pale yellow. In nearly all my specimens these feathers are of a more or less reddish-brown colour, but this, I believe, is due only to the juice of some fruit, as in one rather clean specimen they are pale yellow.

(3) While the whole of the band of the wing is yellow in *C. ochroptera,* and only a few scanty red feathers are sometimes to be seen next the body, the cubital edge in *C. rothschildi* is bright scarlet, more or less mixed with yellow outwards, but not to a great extent.

(4) The yellow shoulder-patch is very much smaller, and often quite restricted and mixed with red. The outer bend of the wing is not pure yellow, but yellowish green.

(5) The rump and abdomen show less or no blackish edges to the feathers, and the abdomen is less distinctly tinged with blue.

I may add that the skulls of *C. rothschildi* appear to be decidedly smaller, and that the bills are generally thinner and the wings somewhat shorter; but these are not very decisive characters for distinguishing this species, as they are not quite constant. In other respects *C. rothschildi* resembles *C. ochroptera.* Were it not for the red cubital edge and the less bluish tinge of the abdomen, *C. rothschildi* might be said to resemble a young stage of *C. ochroptera.*

The amount of scarlet at the base of the outer rectrices varies, and is sometimes spread over both webs of the second and third pairs of the outer rectrices.

In one quite adult female (No. 202 of my collection) some bluish feathers are visible on the forehead; they are perhaps the remains of the immature plumage, which I do not know.

Both Aruba and Bonaire must have received their Amazons from the continent. On Aruba, which is so close to the mainland, they have not become specialized, and very likely fresh immigrants might from time to time fly over to that island. Bonaire, however, is remote enough to produce a new insular form.

This Amazon is common near Fontein, on the N.E. coast of Bonaire, and is said to breed on rocks as well as in hollow trees. I am told that it also occurs on Mt. Brandaris, and that it straggles occasionally to different parts of the island.

These birds roost in the rocks of Fontein and fly out at daybreak, returning to their roosting-places between 8 and 9 A.M. They leave again in search of food in the afternoon, and return just before sunset. They were easily shot when sitting on high trees or on the rocks, their harsh cries indicating their presence, although climbing, creeping, and shooting in the tropical heat and among those wild rocks is rather trying work. When feeding in the plains they appeared to be much more shy than when at home. Their food consists of fruits of the *Melocactus*, *Cereus*, *Morinda*, *Guava*, and other trees.

I shot nine specimens, but two were injured by shot and in moult, so that I brought home with me only seven skins. All are fully adult, and some more or less in moult. The sexes are alike.

The measurements are as follows:—

No.	Sex.	Wing.	Tail.	Culmen.	Height of upper mandible at base.
		in.	in.	in.	in.
188	♂ ad. sect.	8·5	5·4	1·4	0·65
189	♀ ad. sect.	7·85	5·1	?*	0·6
191	♂ sect.	8·5	5·1	1·35	0·59
198	♀ sect.	7·8	5·1	1·27	0·55
199	♂ sect.	8·0	4·9	1·28	0·6
200	♂ sect.	8·4	5·3	1·38	0·6
202	♀ ad. sect.	8·3	5·3	1·27	0·6

* Not measurable; tip wanting.

The eyes, bill, and feet are of the same colour as those of *C. ochroptera*. See above, p. 301.

15. Conurus xanthogenius, Bp.

Bonaparte (Consp. i. p. 1) described *Conurus xanthogenius* from a single specimen, without locality, in the Leyden Museum. He gave Brazil as its habitat, but this, of course, was wrong. The careful description of the type specimen and notes on it in Finsch's work left me little doubt that *C. xanthogenius* was the same as my *Conurus* from Bonaire. To make sure I sent two of my specimens to my friend Büttikofer, who kindly compared them, and found them identical with the type of *C. xanthogenius*.

C. xanthogenius is similar to *C. pertinax*, except that in adult specimens the *entire top of the head is of a beautiful golden-yellow colour*, somewhat more orange on the forehead, while in *C. pertinax the forehead only is orange-yellow*. One specimen only having been known until lately, it was, in my opinion, quite reasonable to consider this form merely as an individual variety, as has been done by Finsch, Schlegel, Salvadori, and others. Since, however, all the adult specimens from Bonaire have the entire top of the head golden yellow, or at least strongly intermixed with golden yellow (all the new-coming feathers being of this colour), there can be no doubt that *C. xanthogenius* must stand as a distinct insular form. There is among the series of *C. pertinax* in the British and Leyden Museums, and among those collected by Herr Peters and myself on Curaçao, not one specimen with the top of the head yellow, although occasionally, but very rarely, a yellow feather appears there, chiefly in caged birds, as is common in Parrots, which are so much inclined to xanthochroism.

The young of *C. xanthogenius* are similar to the young of *C. pertinax*, but begin to show yellow feathers on the head at an early age. While the young examples of *C. pertinax* from Curaçao have the upper mandible always whitish, this part is brown (as in adult birds) in three immature specimens from Bonaire, but in one from the same locality it is more whitish.

It seems that the culmen in the Bonaire species is somewhat longer, as a rule. The measurements of twelve specimens from Bonaire are—total length about 10 inches, wing 5·5 to 5·8 (average 5·6), tail 5 to 5·5, culmen 0·9 to 1·06; while those of *C. pertinax* from Curaçao are—total length about 10 inches, wing 5·4 to 5·7, tail 4·7 to 5·6, culmen 0·83 to 0·95.

Having said so much about the Parrakeet of Bonaire, I must add that it is extremely common and numerous in almost every place in the island where the country is not quite bare. The screaming of these lovely birds is about the commonest noise that is heard in the bush on Bonaire, but they are often rather shy. The yellow head of the adult is so clearly visible that even a geological traveller like Professor Martin noticed it, and has distinctly said that the bird is of a species different from *C. pertinax*.

Whether ornithologists are inclined to call it a species or a subspecies matters little, but it is certainly different from the *Conurus* of Curaçao.

16. BUTEO ALBICAUDATUS COLONUS, Berl.

See above, p. 321. Rare on Bonaire.

17. TINNUNCULUS SPARVERIUS BREVIPENNIS, Berl.

See above, p. 321. Very rare on Bonaire.

18. POLYBORUS CHERIWAY (Jacq.).

Occurs everywhere, but not in large numbers. These birds are often killed because they are supposed to destroy the chickens. Besides the preceding species, I conclude from the reports of the inhabitants that several other birds of prey, and among these *Falco peregrinus* and *Pandion haliaëtus*, visit this island, as well as Aruba and Curaçao, in the winter.

There appear to be no Owls in Bonaire.

19. COLUMBA GYMNOPHTHALMA, Temm.

Very common.

20. COLUMBA PORTORICENSIS, Temm.

Columba portoricensis, Temm. in Knip's 'Les Pigeons,' pl. xv. p. 41.

Columba corensis, auctorum.

My friend Hans von Berlepsch has called my attention to the original description of Jacquin's *Columba corensis* (Beytr. z. Geschichte d. Vögel, 1784, p. 31). The author there says, "*Columba* (*corensis*) *cauda æquali, orbitis denudatis atropunctatis, corpore griseo.*"

"Near Koro, in Venezuela, occurs a fine Pigeon, which agrees in size with the common domesticated Pigeon. It is entirely of a beautiful grey colour, and the feathers of the hind neck are scale-like, which, although of the same colour as the others, appear different in different lights. The red eyes stand in a bare space, which is beset with black spots. The feet are red. The Indians take the young from their nests, feed them up, and eat them." (*Translated from the German.*) Gmelin's diagnosis is merely based on Jacquin's description, and I quite agree with Berlepsch that the description is so uncertain—the more so when considering that the West-Indian *Columba corensis* of recent authors has not yet been found on the continent—that the name of Temminck, who gives a good figure and description of it, should stand for this species. I am very glad to learn that Count Salvadori agrees with us in this conclusion.

Examples from Bonaire are absolutely identical with specimens from Cuba.

I met with this Pigeon only among the rocks on Bonaire, where it is fairly common near Fontein.

Its note is a very loud and strong cooing, consisting of three sounds, somewhat like *coo-róo-coo,* and repeated very frequently.

I did not see this Pigeon on the ground, and it appears to get most of its food from the trees.

The bill is of a dark blood-red colour, horn-white at the tip. The iris consists of two rings, the outer one crimson, the inner one yellow. The naked papillose space round the eye is *yellow,* not red.

There is said to be a Pigeon on the Christoffel in Curaçao, of which neither Herr Peters nor I have been able to get specimens. It is called "*Paloma preto,*" which means "Black Pigeon." A native of Curaçao told me it was the same as the Rock Pigeon (*"Paloma di barranca"* or *"Paloma blauw"*) of Bonaire, and Herr Ludwig, of Curaçao, wrote me to the same effect.

21. ZENAIDA VINACEO-RUFA, Ridgw.

Very common. Large numbers are shot in dry weather at the water-tanks, and they make an excellent dish, as does also the *Columbigallina.*

22. LEPTOPTILA VERREAUXI, Bp.

More common than on Aruba and Curaçao.

They are tamer than the other Pigeons and very easily shot. The natives call it *"Toewiri"* on Bonaire, and sometimes *"Pecho blanco."*

23. COLUMBIGALLINA PASSERINA PERPALLIDA, Hartert.

Extremely common everywhere. In dry weather they assemble at the edge of the water-tanks in such numbers that sometimes 50 or 60, or even more, can be killed with one shot. The islanders use specially loaded cartridges, containing little powder and much of the smallest shot, for these slaughters.

24. ARDEA TRICOLOR, Müll.

Seen once or twice on Bonaire.

25. ARDEA CANDIDISSIMA, Gm.

Not rare near the "salt-pans" in the south of the island.

26. BUTORIDES VIRESCENS (Linn.).

Seen once or twice in the south of Bonaire.

27. HIMANTOPUS MEXICANUS (Müll.).

I saw a flock of these birds in the south of the island.

28. TOTANUS MELANOLEUCUS.

On the 21st July, when on the island of Bonaire, three of these birds passed overhead. I was able to fire only one shot, which brought down one of them. This is an adult male, and agrees perfectly with specimens from other localities, except that its wings are shorter, measuring only 6·95 inches, and the tarsi only 2·2. The bill is of the same length as that of other examples, measuring 2·2 inches. If this should prove to be a resident bird, it is not unlikely to be a short-winged insular form.

Iris deep brown; bill black, dark greyish horn-colour at the base; legs yellowish.

29. TRINGA MINUTILLA, Vieill.

A single male of this bird was noticed and shot on the 23rd July at Laguna, on Bonaire. It agrees with specimens from other localities.

30. ÆGIALITES COLLARIS (Vieill.).

Small flocks of this bird were seen on Bonaire, and two young specimens in moult were procured. It seems to me that the wings and bills are rather short, but examination of a series of adult specimens would be necessary to guarantee the constancy of these characters. The culmens measure 0·53 and 0·57 inch.

31. ÆGIALITIS RUFINUCHA, Ridgw.

Rather common at Laguna and at the "salt-pans," where they undoubtedly breed. Bonaire specimens are like those from Aruba.

See above, p. 307.

32. PHŒNICOPTERUS sp. inc.

A great number of Flamingoes breed on Bonaire. They are locally called "*Chogogo.*" On the 12th June I went to the "salt-pans," where I saw several hundreds of Flamingoes standing in the middle of the vast shallow water-basin on their nests. Unfortunately I had no rifle with me, and the locality not producing a single bush nor anything to hide anyone approaching, it was impossible to get within gunshot-distance. The aspect of hundreds of these wonderful birds was even more picturesque than that of the Indian Flamingo. In spite of the assurances of the men, who told me there were no eggs, I walked, along with my guide, knee-deep through water (which was, in fact, like a solution of salt and saltpetre) to the nests. The travelling was very unpleasant, not to say dangerous. The water was deep in places and the bottom very rough, consisting of very sharp corals, and often of a deceitful crust of salt or saltpetre, under which the water was black and very deep. It required much care to avoid these bad places, and it took us, I think, nearly an hour to reach the nests. Our shoes being cut by the corals, our feet began to bleed, and the salt water caused an unpleasant tingling in the little wounds. The nests themselves were flat plateaus, standing out of the water from three to six inches, the water round them being apparently very shallow, but it was often the fatal crust that caused this appearance, not the proper bottom. Many of the nests were close together and sometimes connected by dry ground. They were quite hard, so that one could stand on them, and almost the only way of getting along was to jump from one nest to the other. The nests consisted of clay, hardened by the sun and penetrated and overcrusted with salt, and of pieces of coral, with a distinct concavity in the centre. On some of the nests we found freshly-broken eggs of some species of Tern, and lying in the water I found two eggs of the Flamingo, which turned out to be quite fresh and eatable, although they must have been in the water for some time. After the breeding-place of the "*Chogogo*" had been thus disturbed, these shy birds left the spot and flew to the other side of the island. I am told that they change their breeding-places very often. The two eggs measure 3·35 and 3·45 inches by 2·13 and 2·16.

Except leaving them of a colour like that of a boiled lobster, this pleasant trip had no evil result on my legs, but my guide, the faithful policeman of Mijnheer van den Brandhof, lost the entire skin of his, and could not go out for some days afterwards.

33. PELECANUS FUSCUS, Linn.

I saw flocks of this Pelican at sea close to the shore.

34. FREGATA AQUILA (Linn.).

I did not see the Frigate-bird on the island myself, but I am assured that it not rarely occurs there.

35. STERNA MAXIMA, Bodd.

See above, p. 326.

36. STERNA HIRUNDO, Linn.

I have already mentioned that I found the broken eggs of some Terns on the nests of the Flamingoes; but I regret that I was so much occupied and excited by the Flamingoes and their breeding-place that I did not pay sufficient attention to the Terns to say with certainty whether *S. dougalli* is found here as well as *S. hirundo*. Two Terns that came near to me and were shot were of the latter species, and therefore I am quite sure that they breed here and that the broken eggs belonged to them.

37. STERNA ANTILLARUM, Less.

These Terns were common, and had both nearly and quite full-grown young ones.

38. LARUS ATRICILLA, Linn.

This Gull was seen several times on the coast.

V. *General Conclusions.*

(1) The three islands of Aruba, Curaçao, and Bonaire have received the greater number of their birds from the South-American continent, but some also from the West Indies, for there are many pure West-Indian forms amongst them besides the continental ones.

(2) There are striking affinities between the avifauna of these islands and that of the islands of St. Thomas and St. Croix (Virgin Islands), but no similarity to that of the Windward Islands; for example, *Conurus pertinax*, *Elainea martinica riisii*, *Icterus icterus**, *Tyrannus dominicensis*†, and *Margarops fuscatus* occur in both localities. Moreover, we have in this avifauna *Certhiola uropygialis* (of which the nearest allies are found on St. Croix and St. Thomas), *Ammo-*

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* It has been suggested that *Icterus icterus* has been introduced into St. Thomas, but this seems to be doubtful.

† *T. dominicensis* is replaced by *T. rostratus*, Scl., on most of the Lesser Antilles.

*dromus savannarum**, and *Eupsychortyx cristatus*†. These facts are very interesting and should be studied more thoroughly: they seem to point to the theory that the Virgin Islands and the islands of Bonaire and Curaçao ‡ were formerly connected in some way, or that they are of the same geological age, and not of the same age as the Windward Islands. Perhaps there was once a line of islands (similar to that of the Lesser Antilles) reaching from St. Thomas through "Los Aves," or the Bird Island, by way of Blanca, Orchilla, Grand Cay, Los Roques, and the second group called "Los Aves," to Bonaire and Curaçao.

(3) The avifaunas of the three islands are generally very similar, but some interesting differences are obvious. Bonaire has most species of West-Indian origin, while Aruba has most continental forms, as would be expected from their situation.

(4) The facts brought to light through my little collection should induce ornithologists to explore the other small islands on the Venezuelan coast, such as Grand Cay, Orchilla, Blanca, and Margarita.

XXX.—*On the Collection of Raptorial Birds in the Norwich Museum.*

By J. H. Gurney.

The Raptorial Collection in the Norfolk and Norwich Museum will before long be transferred to Norwich Castle, together with the rest of the treasures in the Museum, and handed over to the Corporation. In this ancient building, which has been prepared for the reception of the Museum at a cost of £17,000, there will be plenty of room. There the Hawks and Owls will be arranged according to my father's method, and in accordance also with the scheme submitted by Mr. Sclater to the Trustees in June 1891*.

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* *Ammodromus savannarum* is not found in the Lesser Antilles, but occurs in Porto Rico, very near to St. Thomas. See Cory, Cat. W. Ind. B. p. 112.

† It is said that, although *E. sonninii* occurs on St. Thomas, it has been introduced from Venezuela (*cf.* Cassin, Proc. Ac. Nat. Sci. Philad. 1860, p. 378; Newton, Ibis, 1860, p. 308; and Berl. J. f. O. 1892, p. 100). If this is correct, no weight should be attached to the occurrence of a different species (*E. cristatus*) in the Curaçao group.

‡ To Aruba these species may have been brought by the trade-wind from the other two islands.

At present the specimens are, as has been pointed out by Mr. Sclater, a good deal crowded, and it is not easy for the eye to follow the arrangement (commencing in the lobby with the Secretary-bird and ending in the "Owl Room" with the Harriers) adopted for the 390 species represented in the Museum, especially as in many cases there are seven or eight mounted specimens of the same species. My father's principal object was to illustrate geographical distribution, and he attached more importance to this than to the modern minute subdivision of species. This is well shown in the series of Peregrine Falcons, Barn Owls, and Scops Owls.

Among the additions to the Raptorial Collection at Norwich since my father's death, four represent species new to the collection—namely, *Baza bismarcki*, *Leucopternis semiplumbea*, *Scelospizias cenchroides*, and *Scops elegans*,—all of which would have been very acceptable to him, more particularly the second and the fourth. Perhaps a few words about these additions will not be out of place.

Dr. A. B. Meyer, of Dresden, sent us the specimen of *Baza bismarcki*, from New Britain. It is an adult, killed April 10th, 1891, on Gazelle Island (lat. 4°, long. 152°). On comparing it with our *B. gurneyi*, from Russell Island in the Solomon group (P. Z. S. 1888, p. 188), presented by Canon Tristram, it will be seen that it is not so white under the wing, neither has it the white thighs and underparts of *B. gurneyi*. Count Salvadori considers *B. bismarcki* to be intermediate between *B. reinwardti*, the form found in New Guinea, and *B. gurneyi* (Orn. Pap., App. 1889, p. 13). He says:—"This is a form of *B. reinwardti* which, like *B. gurneyi* of the Solomon Islands, is distinguished by the clear underparts." The subject has been further discussed in my father's 'List of the Diurnal Birds of Prey,' p. 154, and by Dr. Bowdler Sharpe in Gould's 'Birds of New Guinea,' where the specific name of *bismarcki* was first proposed.

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* Report to the Trustees of the Norwich Castle Museum and to the Committee of the Norfolk and Norwich Museums on the Collections of the Museum, and on the best mode of arranging them in the new buildings. By P. L. Sclater, F.R.S. Norwich, June 1891.

Of *Baza reinwardti* (Müll. & Schleg.) we have seventeen specimens, collected by Beccari, Linden, Fahn, Bruijn, Wallace, and others,—from Salawati, Ceram, Dorey, Amberbaki, and Waigiou. Of these localities three are in Dutch New Guinea, and Ceram and Waigiou are close by[*].

Dr. Meyer holds out hopes of sending us *Megatriorchis doriæ* (referred by Dr. Sharpe to the Australian genus *Erythrotriorchis*), of which he has recently obtained one for Dresden. I believe my father was in communication with Sir Wm. Macgregor about *M. doriæ* shortly before his death, and I have since made application through Mr. H. Anson to obtain this very desirable acquisition.

We have received from Mr. G. K. Cherrie, of Costa Rica, a skin of *Leucopternis semiplumbea*, labelled "January the 3rd, 1890," and apparently adult, as it has only one caudal band. It agrees well with the description in the 'British Museum Catalogue' (i. p. 220), except that it falls short of the measurements there given, particularly in the length of the tail, which is 4·8 instead of 7·8 inches. This specimen, which was shot in Costa Rica, had, when killed, yellow legs and a pale orange eye, and its stomach contained the remains of a bird. Its back is not so brown as that of *L. superciliaris*. Mr. Lawrence, the describer of this rare bird, writes me that he has seen only three specimens.

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[*] Since the above was written I have received from Mr. T. A. Hauxwell, Conservator of Forests in Burma, a small box of Accipitres, and among them one new to the Museum—*Baza sumatrensis* (Lafr.). It is marked as shot at Meplè, Thaungyin Valley, January 1891, and is in immature plumage. As the stripe on the chin is just apparent, it is probably a little older than the one figured by Dr. Sharpe (Cat. of Birds, i. pl. xi.), and though marked a "female," would, from the following measurements, seem to be a male—crest 2·4 inches, wing 11·5, tarsus 1·3, culmen 1·4, tail 8. The tail has four dark bands. My father notes that an example from Malacca, sent to him from Brussels for examination, measured—crest 2·5 inches, wing 14, tarsus 1·8. The range of *B. sumatrensis* extends from Sikhim to Sumatra. Its nearest ally is *B. ceylonensis*, Legge, which is decidedly smaller, judging from our three specimens, and this Mr. Hume confirms ('Stray Feathers,' 1876, p. 247, note).

The series at Norwich now includes all the Bazas except *B. leucopais* and *B. magnirostris* of the Philippines.

We have still to get *Leucopternis princeps* (figured by Sclater, P. Z. S. 1865, pl. xxiv.), *L. plumbea* (figured, Ibis, 1872, p. 239), and *L. occidentalis*, described by Mr. Salvin, to complete the series. Mr. Cherrie has promised to obtain for us the first and last, if possible.

The Museum has skins of *L. albicollis* (Latham) from Mexico, Quito (*Jameson*), Trinidad, and British Guiana, and examples of *L. schistacea* from Bolivia, the Upper Amazons (two collected by Bates), Yquitos (three), Panama (two), and Samiria in Peru. Of *L. schistacea* my father remarks that Taczanowski, in his 'Orn. du Pérou' (i. p. 109), gives the iris as dark brown, but that three collectors have marked examples in the Norwich Museum as having yellow eyes—J. H. G. (*MS.*).

Shortly after my father's death Professor Menzbier sent the Museum a pair of Severtzoff's *Scelospizias cenchroides* from Turkestan. In 'The Ibis' for 1875 (p. 480, note) it is stated that before he died Dr. Severtzoff admitted that *S. cenchroides* was only a large form of *S. badius*, but in 1884 my father allowed it as a subspecies in his 'List.' *S. cenchroides* is figured in Menzbier's 'Ornithology of Turkestan,' plate iii., where the profusion of cross-bars is shown. We already had Indian specimens of *S. badius* which in size and tint correspond with Severtzoff's *S. cenchroides*, but it is interesting to have got others guaranteed by Prof. Menzbier, whose two skins are labelled "Gjarman" and "Sandych-Kagan."

My father limited the genus *Scelospizias* to eight species and five subspecies. Perhaps an enumeration of the specimens in the Norwich Museum may not be out of place, as between 1884 and 1890 he added many, but struck out *S. castanilius* (Bp.) as being doubtfully distinct from *S. unduliventer* (Rüpp.).

List of Specimens of Scelospizias *in the Norwich Museum.*

S. francesi	Madagascar.	16
S. pusillus	Comoro Islands.	5
S. brutus	"	1
S. polyzonoides	South Africa.	17
S. badius	India	27
S. poliopsis	Siam.	7
S. cenchroides	Turkestan.	2
S. sphenurus	Africa.	15
S. brevipes	Asia Minor.	12
S. tachiro	Africa.	14
S. unduliventer	Abyssinia.	11
S. toussenelii	Gaboon.	3

More specimens of S. *brutus* are wanted. Our example, which in the lapse of years appears to have faded, is labelled "Yeux jaunes, bec bleuâtre d'indigo, pattes jaunes. ♀ tuée ce 6 Juin, 1864."

To the liberality of Mr. Henry Seebohm the Museum is indebted for an addition to the collection of Owls in the shape of an example of *Scops elegans* (Cassin), the *S. semitorques* of Seebohm, from the Loo-Choo Islands, between Formosa and Japan (but not the *S. semitorques* of Temminck and Schlegel, of which we already possessed a large series). It was obtained by the late Mr. Pryer in January 1887, and is the same as was described by my father in 'The Ibis,' 1889 (p. 303). Only five examples are known to Mr. Seebohm (P. Z. S. 1890, p. 345), including the two which Stejneger described. We still require examples of several new subspecies of *Scops* and of *S. insularis* (Tristr.).

Other additions have been made, such as *Ninox dimorpha* (Salvadori) from Jobie Island, north of New Guinea, which we already had under the generic name of *Hieroglaux*, and *Æsalon suckleyi*, from British Columbia, presented by Mr. A. C. Brooks as a companion to one he gave before. *Æ. suckleyi* (Ridgway) is a dark race and *Æ. richardsoni* a pale race of *Æ. columbarius*. My father says he had not seen *Æ. richardsoni* (when writing his "Notes on the Merlins," Ibis, 1882, p. 161), though the Museum contained two young birds from Monterey which he afterwards decided to belong to this form. We have now five, and sixteen of *Æ. columbarius.*

We have also had the gift of a nestling *Buteo swainsoni* obtained at Assiniboia in Canada by Mr. D. L. Thorpe. Its stomach contained grasshoppers and mice. It was taken with two others from a nest in a large prickly bush 12 feet from the ground, and presented by Mr. Thorpe (*cf.* 'Zoologist,' 1893, p. 53).

The Buzzards of the New World seem to be still in rather an unsettled state as to what are species and what are varieties. I believe I am right in saying that *Buteo pœcilochrous* from Ecuador, coming most closely to *B. erythronotus* (Ibis, 1879, p. 176), stands good at present, and that there are two geographical races of *B. borealis*, viz.: *B. socorroensis*, Ridgway (which takes its name from the island to which it is peculiar), and the light-coloured *B. krideri*, Hoopes, inhabiting that part of North America which extends from Texas to Minnesota. If examples of either of these are to be found in any collection in England, it is probably only in the National Collection, for apparently we have none at Norwich, though my father's series of American Buzzards is not a small one.

A skin of *B. lucasanus* with a very light tail was lately offered, but not purchased, as Mr. Ridgway, who named it, writes to say the species is untenable. My father, up to 1884, had never seen this North-American form. The Museum has only one example of *B. borealis harlani* (*cf.* 'Auk,' 1890, p. 205), one of *B. costaricensis*, and two of *B. abbreviatus*. Of *B. alleni*, a subspecies of *B. lineatus* found in Florida, we have a good series of ten, and want no more.

We have the genus *Falco*, restricted in my father's 'List' to seven species and six subspecies, well represented, including a pair of very dark *F. pealei*, Ridgway, from the Kurile Islands, in the North Pacific. These birds, which he obtained in June 1884, immediately after his 'List' was published, are darkest on the breast and belly and under the wings. They are both immature and are labelled as shot in September 1881.

The great Condor from Chili and the Straits of Magellan, *Sarcorhamphus magellanicus* (Shaw), must, if possible, be obtained some day. My father was doubtful about *S. magellanicus*, and was still less of a believer in the permanently brown Condor which has received the name *S. æquatorialis*. Of one alluded to in his 'List' (which is figured in the Proc. Zool. Soc. 1883, pl. xxxv.) he notes :—"The specimen figured was, I think, certainly a young female of the common species; it died about June 1885, before which time the ruff had begun to show puffs of white down. Dark grey feathers began to appear on the mantle, and two light grey feathers appeared amongst the greater wing-coverts. The irides were beginning to assume a tinge of garnet-red."—J. H. G. (*MS.*). After examining this Condor on the 14th of February, 1885, he writes :—"The irides are now decidedly garnet-coloured, though not as brightly so as in the adult female Condor, and all the parts which are white in the latter have become sensibly paler, many of the feathers being tinged with yellowish white disposed more or less in patches." A description of the same bird was given him by Mr. J. G. Goodchild the following April, and soon after it died. A sketch by Mr. Goodchild sent by him to my father in July 1884 shows the white down of the ruff, but not the grey feathers in the wing, which must have been assumed later. It was nine years old or more when it died, and that was the same age to which the one in the Central Park Menagerie, New York, lived ('Auk,' 1885, p. 170).

Of the Common Condor the Museum has a fine adult pair, two young birds, and an egg.

Turning again to the Old World, there is, perhaps, nothing our Committee would be better pleased to obtain than a skin of *Tinnunculus alopex* of Sennaar, Kordofan, and the Blue Nile. Other African birds which the Museum requires from the Dark Continent, now being opened up by so many explorers, are *Melierax poliopterus*, Cabanis, from Somaliland, and *Machærirhamphus revoili*, Oustalet, from the same country. The latter is stated by the French naturalist who described it to resemble *M. anderssoni* in its wings and tail, and *M. alcinus* in its crest and throat, but only the type is at present known. It is scarcely probable that such a very distinct genus as *Machærirhamphus* (*Stringonyx*) should consist of only two species, and those two found in different parts of the world.

The Museum requires *Melierax mechowi*, Cabanis, if it is distinct. My father includes it in his 'List' with a query, and a star indicating that he had not seen it. In a MS. note he adds :—"Mr. Sharpe thinks not distinct from *M. polyzonus* (Journ. Linn. Soc., Zool. xvii. p. 437), but see as to its distinctness Bocage, J. Sci. Lisboa, xxxiv. pp. 65, 67." Dr. Sharpe's remark is that in twelve examples in the British Museum "every gradation between a uniform and a closely-barred wing can be found."

The other species of *Melierax*—*M. canorus*, *M. polyzonus*, *M. gabar*, and *M. niger*—are largely represented in the Museum by specimens from Ayres and other African collectors, and of *M. canorus* (=*M. musicus* (Daudin)) we have three eggs taken by Lucas at Rustenburg in the Transvaal.

As supplementary to his remarks on the colour of the eye in *Melierax* (*cf.* Ibis, 1875, p. 235), my father records (MS. notes) that in July 1884 an adult *M. musicus* at the Zoological Society's Gardens had "dull cherry irides," that two years later they were "reddish orange," and that an adult *M. polyzonus* at the Gardens had the irides of "a rich but not dark hazel."

Accipiter buettikoferi has been described by Dr. Sharpe from three adult Sparrow-Hawks obtained in Liberia, on the coast of Guinea, assigned at first to *A. hartlaubi*, from which they differ in not having white marks on the centre tail-feathers and in having the thighs grey. Subsequently two others presented the same coloration (Büttikofer, Notes Leyden Mus. xi. p. 115, 1889). It does not appear that the Norwich Museum has got *A. buettikoferi*, but it has two adults of *A. hartlaubi* (from Bissao and Gaboon) which have grey thighs, and their tails when spread show some white spots. Nearly allied to *Accipiter hartlaubi* (as to the possible identity of which with *A. minullus* my father refers to

'Notes Leyden Mus.' vii. p. 153), but larger, is the *A. rufiventris*, Smith, at present standing in the Museum under the name of *A. exilis* (Temm.). *A. exilis* my father held to be a synonym of *A. hartlaubi* in immature plumage, but *A. hartlaubi*, *A. minullus*, and *A. erythropus* (Hartlaub) stand separated in the Museum. Of the little *A. minullus* we have 23 specimens, but only one of *A. erythropus*, obtained through Carfrae in 1858.

Of *A. rufiventris* we have twelve specimens from Natal, Lydenburg, King William's Town, Shoa, Transvaal, &c. In confirmation of a theory advanced in 'The Ibis' for 1889 (p. 572), that species will sometimes throw out a "sport" resembling other species, it may be mentioned that adult males of our British Sparrow-Hawk (*A. nisus*) occasionally vary, so as to resemble *A. rufiventris*, in having the breast and underparts a clear rufous without any transverse bands at all. Such a bird, shot in Norfolk, I saw some years ago at Mr. Gunn's shop, and another was obtained by Mr. Henry Doubleday ('Zoologist,' 1875, p. 4429). But the best example of this plain-chested variety was shot in Northumberland and is in the Newcastle Museum.

When my father published his 'List' he had not seen *Microhierax sinensis*, Sharpe, figured by David and Oustalet under the name of *M. chinensis*, and he never got one for the Museum; but he was shown one in 1887 by Mr. Styan killed at Foochow (*cf.* Ibis, 1887, pp. 234, 470), and he notes that "it seemed the largest of the genus, in coloration very like *M. melanoleucus*." The localities given for it by David are the province of Kiangsi, in the centre of Southern China, and Nankin. This species differs from *M. melanoleucus* in having a white spot at the back of the neck, but Mr. Seebohm doubts this being a specific difference (P. Z. S. 1890, p. 345). Besides *M. sinensis* we require also *M. melanoleucus*.

Of *Microhierax fringillarius* (Drap.) the Museum has a large series from Singapore, Banjarmassing, Baram, Batavia, and Sumatra.

Of *M. erythrogenys* (Vigors) we have four from Mindanao and other islands in the Philippines. Of *M. latifrons*, Sharpe, first discriminated by my father, we have one said to have been killed in the Nicobar Islands, and two from Lawas and Sandakan in Borneo.

Henicopernis infuscata, Gurney, ought not to find a place among the desiderata at Norwich, for the type collected by Lieut. Richards in New Britain, July 9th, 1879, was given to the Museum by Canon Tristram in 1890. It was, however, unaccountably lost. It is believed that it was sent by mistake along with some of my father's birds from Natal to the Natural History Museum at South Kensington, and that it is somewhere among the thousands of bird-skins in the National Collection. It is much darker than *H. longicauda* (Garnot) of New Guinea, of which the Museum has five specimens, two of them obtained by Mr. Wallace, in Mysol and Dorey. The fellow-specimen of *H. infuscata*, which Mr. Layard gave to Canon Tristram afterwards, is at Durham still.

In 'The Ibis' for 1891, p. 305, Dr. Steere has described, or restated the description of, a new Harrier to be called *Circus philippensis*, but does not say wherein it differs from *C. melanoleucus*, the plumages of which are given at length by my father (Ibis, 1875, pp. 225–8). If *C. philippensis* stands, a specimen is desirable; but Mr. Everett doubts its validity. To Mr. Everett my father was indebted for eight examples of *Circus spilonotus* from Borneo collected at Papar and Labuan, and there is in the Museum an adult male, which he obtained from Gould, killed near Manilla in the Philippines. We have four specimens of Swinhoe's from Amoy and Formosa, a young male collected by Severtzoff in Turkestan, and a female nearly adult from Japan. The sexes are alike (Ibis, 1889, p. 256).

Other species of the genus *Circus* are well represented in the Museum, but of *C. maillardi* (Verreaux), the Bourbon Harrier, we have no adult. The series of *C. macrosceles*, Newton, having been considerably increased since the 'List' was published, it may be worth giving an enumeration of them.

List of Specimens of Circus macroscceles *in the Norwich Museum.*

Type specimen.

♂ immature ..	Madagascar, Sept. 22, 1862.	Sir E. Newton.
♂ adult........	Lake Hasy, Madagascar.	Rev. J. Wills.
♀ adult........	do. do.	do.
♂? ,, ...	do. do.	do
♀ ,, ...	Joanna, Comoro Islands (*cf.* Ibis, 1876, p. 278).	*Per* G. A. Frank.
♂ nearly adult ..	do.	do.
♂ adult........	do.	Dr. Dickinson.
♂ ,, ...	do.	Sir E. Newton.
♂ nearly adult..	Madagascar (Ibis, 1889, p. 397).	Rev. J. Wills.
♂ ,, ..	do.	do.

My father was of opinion that *Circus humbloti* is a synonym of *C. macroscceles*, but later researches have decided that it is a good species (A. Milne-Edwards and E. Oustalet, N. Arch. Mus. x. p. 234).

Spilornis panayensis, another discovery of Dr. Steere, inhabits Panay and Negros in the Philippine Islands (Ibis, 1891, p. 305), and is distinguished from *S. holospilus* by its small size and pale colouring. Of the latter there are two skins in the Museum obtained by Mr. A. H. Everett at Zamboanga, in Mindanao, and South Leyte, which are in the south part of the Philippine group, and these are an inch less in the wing than four other specimens of *S. holospilus* at Norwich, but as they are not any paler I conclude they cannot be referred to Dr. Steere's new species. Of *Spilornis minimus*, Hume, considered a well-marked species (*cf.* Ibis, 1878, p. 101), we have only one, from Trinket, in the Nicobar Islands. Of *S. sulaensis* we have two, a male and a female, collected by Mr. Wallace in Sula Island, and recently lent to Dr. Meyer for his forthcoming work on the birds of Celebes. Of *S. davisoni*, Hume, and *S. bido* (Horsfield) the Museum has only two apiece, the former from Penang, the latter from Java. Of the remaining seven species which compose the genus we have plenty, but should value additional specimens if in plumages not at present represented.

My father was of opinion that *Astur cruentus*, Gould, is a synonym of *Urospizias approximans* ('List of D. B. of Prey,' p. 38), though Gould's plate is more like *U. torquata*, but Mr. Ramsay tells me the colouring of the plate is misleading. Mr. W. Burton, who obtained what he considers to be *Astur cruentus* in North-west Australia, says it is much larger than *U. torquata*, in support of which statement he has favoured me with a series of measurements taken by the late Mr. Bower. Mr. Ramsay has received authentic specimens from Derby (Tab. List, 1888, p. 1). Mr. Ramsay gives "Port Essington to Derby and inland to Kimberley" as the habitat in the supplement to 'The Australian Accipitres,' 1890, p. 5. He also refers to the subject in the Proceedings of Linn. Soc. of N. S. W. (iii. p. 174). As recently as August 1892 he writes that he is convinced that *A. cruentus* is a distinct species, but adds that it should be compared closely with the Timor bird. We have in the Museum an example from the Swan River of a *Urospizias* which, from the redness of its underparts, my father thought might be Gould's *U. cruenta*, but until we get more specimens *Astur cruentus* must rank among our desiderata.

Seven new species of *Urospizias* have been described since my father's 'List' was published, not counting *U. sharpii*, Ramsay, making this the largest genus of the subfamily *Accipitrinæ*, which in his arrangement includes fourteen genera and two subgenera.

Of *Astur hensti*, Schlegel, we have a very good example, obtained in Madagascar by Mr. Wills, but none of *A. moreli*, Pollen, and none of *A. candidissimus*, which is a pale race of *A. palumbarius* existing in Kamtschatka. Its describer, Dybowski, calls it "une forme particulière." The following are mentioned in Menzbier's 'Orn. Geogr. of Russia' as subspecies of the Goshawk: *Astur palumbarius albidus*, *A. palumbarius schevedowi*, and *A. palumbarius buteoides*. The first of these my father considered equal to *A. candidissimus*, concerning which he remarks that a specimen in the Natural History Museum "seemed only to be a very old male *A. palumbarius*," while to *A. palumbarius schevedowi* he would assign the specimens from the Ural Mountains recorded by him in 'The Ibis' for 1875, p. 354.

Of *Astur striatulus*, Ridgway (*A. henshawi*, Nelson), the Museum has a young male procured from California through Mr. Bridges, and another young bird from Sir William Jardine's Collection labelled "Vancouver Island, N.A. (Brown)." My father was not a believer in *A. striatulus*, and its describer wavered about it (*cf.* 'Auk,' 1884, p. 252). It is a western form of *A. atricapillus*, from which it differs in "having the markings of the underparts so fine as to present a nearly uniform bluish ashy nebulation."

XXXI.—*Notes on the Nesting of some Shetland Birds.*

By Ernest W. H. Blagg, M.B.O.U.

I venture to hope that the following notes, comprising the observations made by my friend Dr. Percy Rendall and myself during a visit paid to the Shetlands in the summer of 1892, may not be devoid of interest to readers of 'The Ibis,' inasmuch as there is already a considerable difference in the Avifauna of the district now as compared with the time when Dr. Saxby wrote his well-known work. We visited the Shetlands in the height of the breeding-season, namely, the latter part of May and the early part of June, with the especial object of seeing, in their nesting-haunts, birds of several species which it is either impossible or difficult to meet with further south; and I may say that on the whole we had every reason to be satisfied with our visit. Its success was in no small degree due to the kindness of my friend Mrs. Cameron, of Garth, who most obligingly furnished us with letters of introduction to landowners and other persons of influence in the district. To Mr. George Bruce, of Sand Lodge, and Captain MacFarlane, of Guendale House, we are also especially grateful, for their extreme kindness and courtesy in acting, as they did, as our hosts and guides in an unknown land.

I shall not waste time in describing the position of the various islands we visited, and, for reasons which will be sufficiently obvious to my readers, I shall not minutely describe the whereabouts of some of the breeding-haunts referred to. In addition to nesting birds I shall also mention a few species which, according to Dr. Saxby's work, are of rare occurrence in the Shetlands, or are not usually met with there in the breeding-season.

FIELDFARE (*Turdus pilaris*). One bird noticed on the island of Noss on the 26th of May, another seen on Balta Isle on the 2nd of June, unless, indeed, it was the same bird gradually working its way north!

WHEATEAR (*Saxicola œnanthe*). Local name "Stinkle." Very abundant and breeding everywhere.

COMMON WREN (*Troglodytes parvulus*). Not by any means abundant, but met with in several places. We were struck with the difference in appearance between these Wrens and the Wren of the South, the Shetland Wrens being larger and more barred. Might not these Shetland birds be *T. borealis*?

PIED WAGTAIL (*Motacilla lugubris*). Seen in Unst, May 31st.

ROCK PIPIT (*Anthus obscurus*). Very abundant, but the nest very difficult to find; however, we managed to discover three nests. The first, found on the 26th of May, was only half built; this was situated in rather a damp and dark spot in a fissure between two large rocks. Another nest, discovered on the 31st of May, contained four eggs very slightly incubated. The nest was situated under a clod of turf at the side of a drain running down to the sea-coast, and was made of dried grass and lined with horse-hair or probably pony's hair! The mother bird was very tame, and remained close by the nest for some time after being put off her eggs. On June 1st we found the third nest; this was discovered by my friend only after turning over some hundred or so of boulders in a spot where the birds were particularly numerous; it contained recently-hatched young and one addled egg. The Rock Pipits' eggs that we took in the Shetlands are larger than any Meadow Pipits' eggs that I have ever seen, but very similar in coloration, though perhaps they have a browner tint.

Swallow (*Hirundo rustica*). Observed on Bressay, May 27th, also at Sand Lodge, June 6th.

House Martin (*Hirundo urbica*). Several pairs flying about the cliffs in the north of Unst, May 31st; several birds at Sand Lodge, June 6th.

Twite (*Linota flavirostris*). Local name "Lintie." Generally distributed. It was a novel experience to find "Linnets'" nests in such situations as the Wagtails build in, though of course we were quite prepared for it. The nests we found were built either in crevices of rocks or amongst the heath and rough grass on the banks of streams, and were composed of such materials as one would expect to find in a Linnet's nest, being generally lined with sheep's wool of several colours, brown, white, &c. One nest we found contained newly-hatched young, and in several cases the eggs were in an advanced state of incubation. The eggs are beautiful objects when fresh, being much bluer than an ordinary Linnet's egg, but are spotted and streaked in the same varied way. The yellow beak of the male bird is very noticeable at some distance away.

Starling (*Sturnus vulgaris*). Found nesting abundantly in the heaps of stones piled up in different places, and frequently in holes close to the ground.

Raven (*Corvus corax*). Breeds in many places still. On Noss, on the 27th of May, we surprised two birds on the cliffs that appeared to be birds of the year; in Unst we saw a lot of Ravens, five together at one place. On an island in the south we saw a well-preserved nest from which the young had been taken a few years ago.

Hooded Crow (*Corvus cornix*). "Hoodie." Very generally distributed, and nest frequently easy of access. We were too late to find eggs; we discovered several nests with young 10 days or so old in them. Some eggs given to us by Mr. George Bruce, and others we obtained elsewhere, are lighter in coloration than the generality of the eggs of the Carrion Crow of the south.

Sky-Lark (*Alauda arvensis*). Very abundant everywhere, and very welcome in a land where song-birds are few and far between.

Snowy Owl (*Surnia nyctea*). A specimen was shot in Unst a few weeks before our arrival there.

White-tailed Eagle (*Haliaëtus albicilla*). This Eagle is said to breed still, amongst other places, at Fitful Head; but an intelligent fisherman there, who appeared to know something of the local birds, informed us that he had not seen anything of the Eagles for some years, and did not believe they nested there now.

Merlin (*Falco æsalon*). We saw Merlins several times, and once found the nest with two eggs; these were placed on a bare spot on the side of a heath-clad bank. The old birds, as is their wont under such circumstances, were very vociferous. The Merlin here, as elsewhere on the sea-coast, appears to feed much on the Rock-Pipits.

Cormorant (*Phalacrocorax carbo*). The "Big Scarf" is not nearly so abundant as its smaller relative the Shag. It nests earlier than the Shag.

Shag (*Phalacrocorax graculus*). "Scarf." Very abundant and generally distributed as a breeding species. I shall never forget a visit I paid to a large breeding colony down the cliffs of Noss on the 28th of May. The place where I managed to effect a landing amongst them was where there had been a large landslip some years previously, and the broken cliffs abounded with caverns, and huge boulders were piled one upon the top of another. Inside these caverns, and under these boulders, the Shags had placed their untidy nests. As I approached them they generally retreated to the end of their cave, and there set up such a hideous noise as must be heard to be duly appreciated, all the while opening their mouths wide and exposing the peculiar yellow throat, or snapping their beaks. Occasionally they would vary the proceedings by charging out, and then one had to hold firm to avoid being sent down the cliff by them! The number of nests containing eggs about equalled those containing young: the young were in all stages of growth, and the eggs in some nests were quite fresh; five was not at all an unusual number to find in a nest. Shags appear, like many other birds, to keep on adding to the fabric of their nests during incubation, for I found many nests, containing well-grown young, with green vegetation round the edges. The ground all round was honeycombed with the nesting-holes of Puffins, and on the lower ledges below the Kittiwakes were building their nests. It was an interesting scene of bird-life, but not pleasant to the olfactory nerves; and the worst of that "Shaggery" was that the birds, their nests and eggs, the caves, the rocks, the very ground, were all swarming with Shag-lice, and it took my friend and myself, and some sympathizing fellow-passengers in the ferry-boat, all our time to pick these lice off my clothes and consign them to a watery grave. To give them their due, they did not bite, but they tickled one most uncomfortably, and I shall think twice before I explore a crowded "Shaggery" again.

Heron (*Ardea cinerea*). One seen on Noss, May 26th.

Wild Duck (*Anas boscas*). Noticed pretty generally.

Common Eider (*Somateria mollissima*). "Dunter." Noticed pretty generally, especially the male birds, which are very handsome and conspicuous objects. We found several nests, the parent duck sitting very close on her large dark-green eggs. The natives consider these eggs a great delicacy.

Ring-Dove (*Columba palumbus*). One seen close to Guendale Bay, June 8th.

Rock-Dove (*Columba livia*). Abundant. The old "Broch" or Picts' Castle on Mousa has been fairly taken possession of by the Rock-Doves, which have turned its circular galleries into a dove-cot. Exploring these with the aid of candles we discovered several eggs, but most of the first nests had already produced young birds which had flown. One of these we found on the outside of the building and inspected closely, besides the remains of several more which appeared to have afforded meals to the Peregrines of the neighbourhood.

Turtle-Dove (*Turtur communis*). One remained about the garden at Sand Lodge for several days during the first week of June.

Land-Rail (*Crex pratensis*). One heard near Balta Sound, June 4th.

Coot (*Fulica atra*). Found nesting on several of the lochs in the south of Mainland.

Golden Plover (*Charadrius pluvialis*). Apparently breeding in most places, but not abundant, in Unst, where we found two nests containing four eggs each, the old bird in each case sitting till nearly trodden upon and then flying away with legs hanging down, and trying to decoy us away from the nest with all sorts of antics. The nests were moderately deep depressions in the moss, formed in such a way that the bird would be well sheltered from observation when sitting on her eggs.

Ringed Plover (*Ægialitis hiaticula*). Very abundant and breeding in all sorts of situations, from the sea-shore to the tops of the hills.

Lapwing (*Vanellus vulgaris*). Breeding on Noss and abundantly in Unst.

Oyster-catcher (*Hæmatopus ostralegus*). We generally found this handsome bird nesting on all the islands we visited. This species is frequently to be seen contending with the Hooded Crow, which is probably trying to rifle it of its eggs or young.

Common Snipe (*Gallinago cœlestis*). Generally distributed. We twice met with the young in down, and most charming little objects they are. When once discovered, and after you turn them down again, they seem to be aware that it is of no use to try to assimilate themselves to their surroundings while actually under your eye. In a listless sort of way they move off till they are some distance from you, and then they lose no time in making themselves invisible. I have noticed this with other species, *e. g.* the Lapwing and Ringed Plover.

DUNLIN (*Tringa alpina*). A few examples were noticed in Unst.

RED-NECKED PHALAROPE (*Phalaropus hyperboreus*). A few pairs of this bird nest in Unst, where they are strictly protected.

ARCTIC TERN (*Sterna macrura*). Only just returning to its breeding-ground at the beginning of June.

BLACK-HEADED GULL (*Larus ridibundus*). We found about 20 pairs nesting on the marsh between Lochs Spiggie and Brow, where, as we were informed by Captain MacFarlane, this species has nested only for the last three years. We saw no nests containing young, but in the few eggs which we took incubation was much advanced. This was on the 9th of June.

COMMON GULL (*Larus canus*). Breeding pretty generally on most of the islands, usually in small colonies, the nest being built indifferently on rocks or on the ground close to the sea. The eggs vary considerably in size, even in the same nest.

GREAT BLACK-BACKED GULL (*Larus maximus*). Generally distributed, usually selecting an isolated rock on which to place its nest, but on the Holm of Noss, which is quite inaccessible, there is a large colony, numbering some scores of pairs, of great Black-backs.

LESSER BLACK-BACKED GULL (*Larus fuscus*). Very abundant, nesting on all the islands, sometimes in colonies away from the coast, but as a rule on the low rocks or shingle close to the sea-shore. This species does not place its nests in lofty situations like the Herring Gull. From the many hundreds of eggs which we saw "in nido" we selected a series of beautiful varieties, some having the ground tint of a lovely bluish-green colour, others being straw-coloured. The second layings of this bird show a marked deterioration in size, and more variation in colouring than the eggs of the first set. As this species takes no pains to place its eggs in inaccessible situations, it probably comes in for more rifling by the natives than any other species. I think the Shetland natives are more diligent in collecting and eating the eggs of sea-fowl than even the natives of Wales. We managed to persuade some of our boatmen that they gave themselves useless trouble when they gathered eggs which rose to the surface immediately on being placed in water.

HERRING GULL (*Larus argentatus*). Very abundant, nesting as a rule on lofty cliffs, but not nearly so invariably as is the case on the coasts of England and Wales. In Shetland you frequently find the Herring Gull's nest "on the flat" at the top of a cliff.

KITTIWAKE (*Rissa tridactyla*). There are very large colonies of this elegant Gull at the foot of many of the loftier cliffs, notably at the Noup of Noss and in the northern parts of Unst. Most of these birds were only building their nests at the end of the first week in June.

RICHARDSON'S SKUA (*Stercorarius crepidatus*). There is a large colony of this very interesting bird in the north of Unst, and several smaller colonies on other islands, "Scoutie Allan" being the name by which it is known to the natives. The peculiar half cat-, half peacock-like cry of this bird, its mysterious dark and light phases of plumage, and the rapidity of its evolutions when on wing, combine to render it one of the most fascinating birds I know. The birds were only just beginning to lay in the first week of June; one nest we found contained an egg of a beautiful blue undertint, the other egg in the nest being of the normal coloration.

GREAT SKUA (*Stercorarius catarrhactes*). We saw one of these fine birds circling high up in the air, like some bird of prey, when we were some distance from the nesting-ground in Unst. The man in charge informed us that seven pairs nested on Hermanness Hill in 1891, and nine pairs in 1892; one of these pairs had been robbed of their eggs by the natives a few weeks before our visit, but at that time they were sitting again, and from what I have since heard I believe that the nine pairs of Skuas all hatched off their eggs in 1892.

Razorbill (*Alca torda*). Abundant.

Common Guillemot (*Uria troile*). Abundant.

Black Guillemot (*Uria grylle*). "Tystie." This is *the* Guillemot of the Shetlands, and is a noticeable feature in the "seascape" everywhere, with its black plumage and conspicuous white wing-patches. It is a difficult thing to discover the nesting-hole of this species, as the bird seldom betrays its secret by flying either to or from its eggs whilst anyone is looking on. We obtained eggs in the first week of June.

Puffin (*Fratercula arctica*). Abundant, nesting in many places. The Puffin is said to be able to hurt one's hand severely with its beak. I can only say that a great many Puffins have had hold of my hand, and that they have never yet hurt me. I suppose I have been more lucky than others.

In conclusion I may say that a visitor to the Shetlands must be at once struck with the great tameness of the Gulls. They may be seen, especially in the early morning, standing on the roofs of the houses in large flocks, and perching on the boats in the harbour, while people are passing within a few feet of them. Another noticeable feature is that the breeding-season of one species of bird is not so far before or behind another as is the case further south; *e.g.* the Herring Gull is not nearly so much earlier in nesting than the Kittiwake as it is in the south.

XXXII.—*On the Cause of Variation in the Shape of the Eggs of Birds.* By HENRY SEEBOHM.

AN article on the shape of the eggs of birds by Dr. Nicolsky, Professor of Zoology in the University of St. Petersburg, has recently been published in the 'Revue des Sciences naturelles' of that city *.

Roughly speaking, it may be said that birds' eggs in shape are of one of three forms :—

1st. Round or apple-shaped, such as those of Falcons, Owls, and Kingfishers.

2nd. Oval or plum-shaped, as are those of Pigeons, Nightjars, Cormorants, and others.

3rd. Pyriform or pear-shaped, as those of Waders.

Dr. Nicolsky has invented a formula by which the shape of each egg may be broadly expressed. This formula consists of a fraction, the numerator of which represents the greatest breadth of the egg, assuming 1000 to be the greatest length, and the denominator of which is the distance of the centre of the egg at its greatest breadth from the obtuse end, on the same assumption. The formula of a perfectly spherical egg, according to this plan, would be $\frac{1000}{500}$; that of an oval egg, in which the breadth was only half its length, would be $\frac{500}{500}$; whilst that of a very pear-shaped egg might be $\frac{500}{333}$.

Dr. Nicolsky has also invented a hypothesis to account for the variation in the shape of birds' eggs. He suggests that the normal shape of the egg is spherical, and that it becomes elongated by the pressure on it of the wall of the ovary before the calcareous shell is deposited.

He suggests that birds which lay round eggs usually keep to a vertical position, in which the weight of the egg counteracts the pressure of the ovary, and that those which lay oval eggs usually maintain a horizontal position, during which the weight of the egg assists the pressure of the ovary. He further suggests that pyriform eggs are laid by birds which frequently change their position, like the Guillemot, which is vertical when it perches and horizontal when it flies or swims.

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* See 'Cosmos, Revue des Sciences,' no. 411, p. 32 (Dec. 10, 1891); also 'Nature,' vol. xlvii. p. 253 (1893).

How far these hypotheses are consistent with facts it is difficult to say, but the alternative theory that the shape of the egg-shell is determined by its internal rather than by its external environment is supported by a considerable amount of evidence.

The eggs of the *Charadriidæ* are remarkable for their pyriform character, in marked contrast to those of the *Meropidæ* or *Alcedinidæ*, which are round, or to those of the *Columbidæ* or *Caprimulgidæ*, which are oval. It can scarcely be asserted that the birds composing these five families differ much in the positions which they usually assume. The *Charadriidæ* differ from the birds contained in the other four families above mentioned in having longer legs. The *Herodiones* have, however, still longer legs than the *Limicolæ*, but lay eggs of a much less pyriform shape. It can scarcely be asserted that the birds of these two suborders differ materially in the positions which they ordinarily assume, but they do differ remarkably in the condition of the young at birth. The *Limicolæ* are "præcoces," and are born with long stiff legs, so that they can walk at once, whilst the *Herodiones* are "altrices," and are born with comparatively short flexible legs, so that they are helpless for many days.

It may perhaps be premature to generalize so far as to say that long-legged "præcoces" (*Limicolæ*, &c.) lay pyriform eggs, and short-legged "altrices" (*Caprimulgidæ*, *Alcedinidæ*, *Strigidæ*, *Meropidæ*, &c.) lay round eggs, whilst the birds possessing either of the other two possible combinations, long-legged "altrices" (*Herodiones*, &c.) and short-legged "præcoces" (*Anseres*, &c.), lay oval eggs. This hypothesis, however, appears to be quite as tenable as that propounded by Dr. Nicolsky. But the subject is a new one and requires patient investigation. It cannot, nevertheless, be doubted that there are good reasons for the diversities in the shape of birds' eggs, as well as for their variation in colour, and there is probably more than one cause operating in this direction.

XXXIII.—*On a Point in the Mechanism of the Bill in Birds.*

By W. P. Pycraft, Anatomical Department, University Museum, Oxford.

It is a well-known fact that very many birds possess the power of raising the upper jaw, though in varying degrees of freedom, depending upon its general conformation and upon the nature of the articulation with the frontal bones. Thus in the Parrots, which are remarkable for the facility with which the upper jaw is raised, we have a fronto-nasal hinge, whilst, more generally, the same end is obtained by slender and flexible premaxillary nasal processes, which overlap the frontal bones.

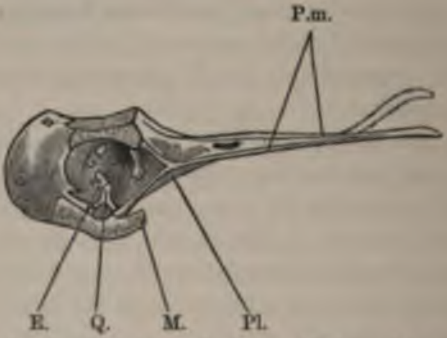
In every case which has been recorded up till now, however, the upper jaw has been moved bodily, but in the case I am about to describe the *distal extremity* only is raised.

Some two years ago, a live Dunlin (*Tringa alpina*, Linn.) was given me, which I endeavoured to keep as long as possible, in the hope of learning something of its life-history. In this I was only partially successful, for the bird lived but a few days—during which time, however, I imagined, on two or three occasions, that I detected an upward turning of the tip of the upper jaw, apparently accompanied by a very human-like gape; nevertheless, owing to the speed and unexpectedness of the action, I failed to satisfy myself that I was not mistaken.

During the Christmas holidays I paid a short visit with my brother to Breydon Water, Great Yarmouth, for the purpose of obtaining specimens. Dunlins were exceedingly numerous and we bagged several; amongst these were two wounded birds, which I undertook to kill, hoping that I might now set at rest my suspicions of other days.

In both cases, in the spasmodic contractions preceding death, the tip of the beak was distinctly curved upwards; but, in the anxiety of watching for this particular movement, I quite forgot to notice whether it was correlated with the opening of the mouth or not, although in all probability it was.

On my return to Oxford, I dissected the head of one of these birds and found, as I expected, that the movement was due—and I think mainly—to the action of the muscles attached to the quadrate and pterygoid bones. I have no doubt that the majority of the readers of 'The Ibis' will readily call to mind the muscles to which I refer, but for the sake of those who may not—for we are not all ornithotomists—I may perhaps be excused if I briefly describe them.



View of the right side of the head of a Dunlin (*Tringa alpina*, L.), showing, by the dotted lines, how the bill curves upwards as a result of the contraction of the muscles described on p. 363. Only one of these muscles is seen, the other being concealed by the quadrate bone and the entotympanicus.

E. Entotympanicus; Q. Quadrate; M. Mandible cut short; P.m. Premaxilla; Pl. Palatine.

These muscles are two in number. The one (E.) arises from the basisphenoid below the optic foramen, and is inserted into the upper border of the orbital process of the quadrate bone (Q.); the other (which is not shown in the figure) arises from the inferior border of the orbital septum and the rostrum of the basisphenoid, and, its fibres converging, is inserted, as a slender tendon, into the upper border of the proximal end of the pterygoid.

These two muscles are described by Dr. Gadow[*] as a part of the *musculus temporalis*, which, according to this author, is composed of five parts, to the fifth of which the muscles in question belong; further than this, however, they are not specially distinguished. They have nevertheless been named independently and by several writers, each of whom has bestowed a different name upon them. This fact tends to confuse the subject not a little. As a case in point I may mention that both Owen and Dr. Shufeldt have given the name of entotympanic to each of the muscles now under discussion, yet neither had the same muscle in view. Owen's entotympanic (or entotympanicus, to be quite correct) is that which runs from the basisphenoid to the quadrate, or "tympanic" as he calls it, whilst that of Dr. Shufeldt runs from the orbital septum to the pterygoid *.

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[*] See works of reference cited at the end of this paper.

In order to understand how this particular movement is brought about, it is necessary to bear in mind that the distal end of the quadrate articulates on its outer side with the quadrato-jugal bar, on its inner with the pterygoid, and that this in turn (the pterygoid) articulates with the palatine (Pl.), the distal end of which, together with that of the quadrato-jugal, joins the premaxillary bones. Now, on the contraction of the muscles in question, the quadrate and pterygoid bones are thrust forwards, and with them all the bones opposed to them in front; at the trifurcation of the premaxilla the weakest point is reached, and the remainder of the beak curves upwards. In ordinary birds under similar conditions this point (the weakest) would be at the frontonasal articulation, and consequently the whole jaw would be raised, instead of the tip only. Perhaps a reference to the figure given herewith (p. 362) will assist in making these details clearer.

Prof. Huxley attributes the raising of the upper jaw to the contraction of the digastric muscle †, considering that on the opening of the mouth the quadrate would be thrust forwards, and thus it will be noted the same movements will be set up as those which I have described. I cannot but think, though, that this muscle plays a secondary part in the system.

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[*] Dr. Shufeldt is describing the myology of the head of the Raven, where this muscle gives off a tendinous slip to the distal end of the quadrate.

[†] This is apparently equivalent to the human digastric, and the biventer maxillæ of Gadow, Shufeldt, and Owen.

At first sight, perhaps, the reasons for this interesting arrangement may seem rather obscure, but it has struck me that really it may be of importance to birds which gain the greater part of their food by probing in soft mud. I imagine that the beak is thrust down into the soil closed, and that, in all probability, unless some special provision were made, the slender bill would be powerless to force away the surrounding earth sufficiently to enable it to grasp the food it was in search of. Whether or not this is the correct explanation is a subject for further observation.

It may be interesting to know that if the head of a freshly-killed bird, or one preserved in spirit, be gently squeezed in the region of the angle of the mandible, the movements described will be set up.

I hope to be enabled to extend my observations to the other members of the Scolopacidæ, amongst which I expect to find some noteworthy modifications of this interesting feature; should anything of sufficient importance be discovered, I shall be pleased to communicate particulars in these pages. Those having access to the Zoological Gardens have, I imagine, a splendid opportunity for verifying my statements, and I hope this will be done.

In conclusion, let me say that I by no means profess to have exhausted the literature of this subject or to have gone deeply into the inquiry; time must show whether it is worth further attention. All that I have done now is to bring the fact under the notice of those who have time and opportunity, trusting that it will be of sufficient interest to tempt them to add it to their list of things "when found to be made a note of."

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4. Shufeldt. Myology of the Raven, p. 19 (1890).
5. Gadow. Bronn's Klassen und Ordnungen des Thier-Reichs, IV. Abtheilung, Aves, Theil i. p. 323 (1886).
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XXXIV.—*Swifts and Humming-birds.*

By Frederic A. Lucas.

Dr. Shufeldt's recent paper on the Swifts and Humming-birds[*] is the argument of an Advocate rather than the careful summing-up of an unbiased Judge, and I for one must protest, not only at much of the matter contained in the article, but also at the manner of its presentation. Noteworthy in this latter connection is the continued reiteration that nowadays none, save a few benighted ornithologists, consider that the Swifts have aught to do with the Humming-birds, this idea, we are told, having been long ago exploded. Even while Dr. Shufeldt's paper was in the printer's hands there have appeared two important contributions to ornithological literature,—the British Museum Catalogue of *Trochilidæ,* by Mr. Salvin, and a paper on Avian Classification, by Dr. Gadow. Neither of these gentlemen seems to have been aware of the "explosion," nor have Dr. Fürbringer, Dr. Sharpe, or Professor Huxley (whom Dr. Shufeldt persistently misquotes[†]) recanted their previously expressed opinions, so that in justice to his readers Dr. Shufeldt should tell us precisely who, among ornithologists, have accepted his conclusions that the Swifts are practically Swallows and have no relations with the Humming-birds.

Let me say here that it is not the separation of Swifts and Humming-birds, provided they are kept near one another, that is to be objected to, so much as the constant statement that they have no characters in common, while the Swifts and Swallows are so near akin. My own views at present are that through *Macropteryx* the Swifts touch the Goatsuckers *closely*; that through *Chætura* they have relations with the Humming-birds, although in certain structural points the generalized *Macropteryx* shows Trochiline relations also; and that, unless we can take the Goatsuckers into the great Passerine circle, the Swifts too must stay outside.

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[*] 'The Ibis,' January 1893, pp. 84–100.

[†] Not that Professor Huxley's words have been changed, but that they have been so used as to convey a false impression; and this, to my mind, is the most unfair kind of misquotation.

In reply to the query "How is it that Humming-birds are restricted to America?" I would say, for much the same reason that torpedo-boats do not cross the Atlantic—lack of power and fuel-capacity. The Humming-birds, from their great local multiplicity of species, probably originated in South America and spread northward *. Since their excessive activity calls for great expenditure of muscular tissue, they need a liberal supply of food, and this food consists principally of minute insects which are to be had only in proper localities. Migration by way of the north is out of the question; there are no way-stations on the ocean ferry, and even were the Humming-bird sufficiently powerful in flight to cross, it would starve to death on the way.

We are told that, as to plumage, Swifts have no sexual colour-distinctions, nor plumes, nor ornamental feathers, while Humming-birds have all three. Now in *Chætura rutila* and *C. rufitorques*, and in all the species of *Macropteryx*, the males and females are different, while in about one-third of the known species of Humming-birds the sexes are robed alike. The long tail-feathers of some of the Swifts might well be considered ornamental, and all species of *Macropteryx*, notably *M. mystacea*, have local plumes or crests.

As to pterylosis, the Humming-bird has a spindle-shaped apterium on the crown, and the Swift an inverted, crescent-shaped apterium over each eye, these being, so far as material has been examined, peculiar to the respective groups and not found in the Swallows.

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* Birds of restricted range seem to have a tendency to split up into species and subspecies, as in the well-known case of the birds of the Galapagos Islands. In the American genus *Harporhynchus* one species, *H. rufus*, is migratory and widespread, the eight other species and subspecies are non-migratory and of restricted and contiguous habitats, and we see the same thing repeated in the genus *Pipilo*. There would seem to be good reason for this. As a non-migratory bird spread outward from its original centre, it would meet in different localities with different conditions of food, climate, and physical surroundings. Generation after generation would be subjected to the same conditions as their ancestors, and any forces that might cause variation would be continuously at work, while any variation, whether arising from external or internal causes, would stand a better chance of perpetuation by in-breeding among birds living and breeding in one locality than among migratory species, where the chance of destruction or separation of individuals during their journeys would naturally be greater.

The dorsal tract of the Swallow is an inverted, short-armed Y; the dorsal tracts of the Swift and Humming-bird are continuous from neck to rump, with a spindle-shaped apterium in its centre. Both Swift and Humming-bird have apteria on the nape and on the inferior surface of the neck, and although Dr. Shufeldt says these are "*never* present in the Swifts or Swallows," he might, had he examined such genera as *Macropteryx* and *Collocalia,* have written otherwise. The statement that the black pigment spaces, so apparent on the brachia of Swifts, are entirely absent in Humming-birds is equally erroneous, for they are present in such forms as *Campylopterus* and *Florisuga*. On the whole, the pteryloses of Swift and Humming-bird are more alike than those of Swift and Swallow, as a glance at the figures of Nitzsch will show.

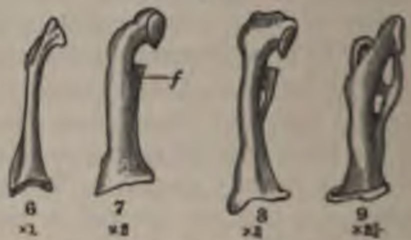
The pterylosis of the Humming-bird is one of the prettiest instances of adaptation imaginable: the nuchal apteria come where the neck touches the back and breast, the lateral apteria receive the folded wings, and the ventral apterium allows the warm body to come in contact with the eggs.

It seems almost superfluous to refer to the sternum, this bone having been so often discussed; but as it is implied that undue stress has been laid upon the un-notched character of the posterior border of the Swift's sternum, it may be well to say that the value of this portion of the sternum is small when compared with that of its other portions, and in the present instance may well be omitted.

The Swallow, in common with all Passerine birds, has a large Y-shaped manubrium, grooves for the coracoids, and large costal processes to which the ribs are attached. The sternum of the Humming-bird has a rudimentary manubrium and costal processes, elliptical facets for the coracoids, and the ribs are joined to its sides, all of this being equally true of the sternum of the Swift, except that the costal processes are a shade larger and may bear one, or, as in *Macropteryx,* even two ribs.

Coming to the skull, we find that Professor Stewart considers the palate of the Humming-bird as a modification of the ægithognathous type[*]; and if this be so[†], Swift, Swallow, and Humming-bird would in this particular be alike.

Fig. I.



Right coracoids of :—6. *Progne subis*, × 1; 7. *Chætura pelagica*, × 2, *f*, line to foramen; 8. *Macropteryx coronata*, ×2; 9. *Campylopterus hemileucurus*, ×3.

We read that in the Swifts the coracoids are "much as we find them in Swallows," while those of the Humming-bird are "*totally* unlike this bone in *Cypseli*." The uniqueness of the Humming-bird's coracoid consists largely in having the "tendinal canal closed by bone and the shaft perforated by a large foramen below it." Now all the Swifts that I have seen possess the lower perforation mentioned, while the ossification of the ligament which holds in place the great levator tendon would give the closed canal. How little change in the existing state of things is needed to bring about this result, especially in *Macropteryx*, can be seen at a glance. Also the coracoids of Swifts and Humming-birds agree in lacking the epicoracoid of the Swallow, as well as in the vastly more important feature of being supported on facets instead of being, like those of the majority of birds, implanted in grooves. The coracoid of the Swallow is slender, imperforate, has a well-developed epicoracoid, and is implanted in a groove. From these notes and from the accompanying figures (6–9) the reader may draw his own conclusions.

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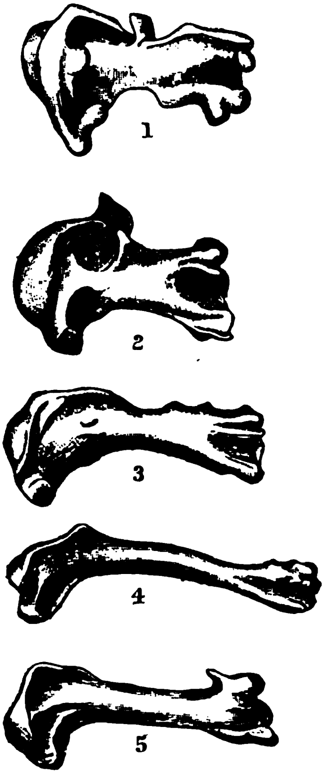
[*] *Cf.* Sharpe, 'A Review of the Recent Attempts to Classify Birds,' p. 81, footnote.

[†] Professor Stewart will, I trust, pardon this quotation, as I have not seen any publication of his views other than the note alluded to, and know not whether subsequent dissections have confirmed his opinions. The Humming-bird's palate certainly suggests a case of arrested development.

Fig. II.



Right humeri of :—1. *Campylopterus hemileucurus*, × 4 ; 2. *Cypselus apus*, × 2½ ; 3. *Macropteryx klecho*, × 2 ; 4. *Chordeiles virginianus*, × 1 ; 5. *Progne subis*, × 2.

It would require careful dissections, much close study, and a lengthy article to do justice to the wing of the Humming-bird, and I have contented myself with offering a series of figures (1–5) showing what appear to me various steps in the transition from the humerus of the Goatsucker to that of the Humming-bird, and I fail, in any of them, to see any striking morphological resemblance to the humerus of a Swallow. It must be steadily borne in mind that, as the Humming-bird is without a rival in its power of aerial evolution, we must expect to find such mechanical and adaptive modifications in its mechanism as exist in no other bird, and we must not confound physiological modifications with morphological resemblances.

The comparison of the furcula of the Humming-bird to that of the Albatross, coupled with the remark that these birds, as well as the Swifts, are great fliers, would lead one to infer that the similarity was due to physiological adaption. This, however, can scarcely be the case, since there are no two birds whose mode of flight is more at variance than those named above. In the case of the Humming-bird, too, the furcula is not functional; the bird could get along without it, while in the Albatross its power to brace the wings apart is but trifling. The resemblance is apparently due to the fact that in many points these birds are both generalized and the furcula morphologically low, its pattern being in fact suggestive of what we see in many lizards.

There are some points in the Humming-bird's wing that are structurally more Passerine than what we find in similar portions of the wing of the Swift, and this, in conjunction with Professor Stewart's observations on the palate, will bring the *Trochili* a step or two nearer the great Passerine assemblage than they have usually been placed.

There are other points that I would like to discuss; but this paper is already rather long. I would like to acknowledge my indebtedness to Dr. Sclater for specimens of *Cypseli*, and to express my regret that untoward circumstances have prevented me from completing my examination of them.

In conclusion, I wish to say that these remarks are not put forward in any spirit of captious criticism. No one admires Dr. Shufeldt's enthusiasm, or envies him his power of continued application, more than myself, nor do many better appreciate the amount of information that he is rendering available. What I *do* object to in the present connection is the utterance of sweeping generalizations based on the examination and comparison of a limited number of local forms, and the assumption that certain questions have been definitely answered when we are really just beginning to gather in the facts that shall make such answer possible.

Festina lente is a good motto. When we know the anatomy (using the term in its broadest sense) of every well-marked form among the Swifts and Humming-birds, when the embryology of the two groups has been thoroughly worked out, when we are agreed as to what are morphological and what purely adaptive characters, then, and only then, can we with some degree of certainty say what are the exact relations between these two highly specialized forms.

XXXV.—*On the Occurrence of White's Thrush in European Russia.* By Dr. M. Menzbier, Professor in the University of Moscow.

The life-history and geographical distribution of White's Ground-Thrush (*Turdus varius*) being so insufficiently known, I have endeavoured to procure some facts for the elucidation of this question. Contrary to the opinion of Mr. Seebohm that the western range of this species in summer is probably limited to the watershed of the Yenisei and the Lena, I have always been of opinion that White's Ground-Thrush is distributed in the summer throughout the whole wooded districts of Siberia. My conviction was based on the fact that this species is much too common in Western Europe to be only an accidental straggler from Eastern Siberia. Moreover, it is very remarkable that not a single occurrence of White's Ground-Thrush from any part of Russia has been recorded, though it without doubt migrates to Western Europe through our country. For many years I have sought for White's Ground-Thrush among skins of the Missel-Thrush (*Turdus viscivorus*) from various parts of Russia, but in vain. At last, during my visit to Siberia in 1890, I was told by Prof. Kovtzov, of Tiumen, that White's Ground-Thrush is a rare straggler to the southern portion of the Government of Tobolsk, and is common in the northern part of the Province of Admalinsk, whence a skin was presented to me for identification. I have now the pleasure of making known the fact that *Turdus varius* probably breeds in the Ural Mountains. In the year 1891 a young zoologist, Mr. Sushkin, was sent by the Imperial Society of Naturalists of Moscow to collect birds in the Government of Ufa. A large series of about 900 skins and many skeletons were brought home by this gentleman from his expedition, and the greatest prize of this collection was a beautiful skin of White's Ground-Thrush received by Mr. Sushkin from a sportsman who had the good fortune to secure it *in July* of 1887 in the vicinity of the town of Zlatoust. Unfortunately the sex of this specimen, which was regarded by the sportsman as nothing more than a pretty skin of the Missel-Thrush, was undetermined. A second specimen of White's Ground-Thrush obtained in Russia is a female, procured in August 1891 near Perm. The fortunate possessor of this skin, a well-known explorer of the Government of Perm, Mr. Teplouchov, has sent it to me for identification. A third specimen of this Thrush was obtained *in August* 1892 in the fir-forests, at a distance of twenty versts from Krasno-Ufimsk (Government of Perm), by a Tartar, and was purchased in the flesh by Mr. Knüpfer, a teacher in the Industrial School in that town. Thanks to Mr. Knüpfer, this skin is now in my possession. Judging from the dates of the occurrences of the first and third specimens, I think that White's Ground-Thrush probably breeds in the woods of the Ural Mountains. But, however this may be, we have now at any rate a right to include *Turdus varius* in the list of Russian birds.

XXXVI.—*On the Nest and Eggs of* Gerygone magnirostris, *Gould.* By Alfred J. North, F.L.S.

"Of *Gerygone magnirostris* I regret to say but little information has as yet been received. The two examples in my collection are all that have come under my notice; and these were shot by Gilbert, on Greenhill Island, near Port Essington, while hovering over the blossoms of the mangroves and engaged in capturing the smaller kinds of insects, during which occupation they gave utterance to an extremely weak twittering song."

Since this passage was written by Gould (B. Austral. ii. pl. 100), nearly half a century ago, no additional information has been recorded respecting the Great-billed Gerygone. It is still a very rare bird in collections, the British Museum not possessing a single specimen at the time (1879) when Dr. Sharpe prepared the fourth volume of the Catalogue of Birds (p. 222), in which the members of the genus *Gerygone* are included. I am now able to give some fresh facts about it.

Mr. J. A. Boyd, of the Herbert River, North-eastern Queensland, who has devoted a large amount of his time during the last twenty years to Australian ornithology, informs me that *Gerygone magnirostris* is a common species in that neighbourhood, arriving in the latter part of September for the purposes of breeding, and departing again about the end of February or the middle of March, and that he has frequently obtained its nest, eggs, and young. With one exception, all the nests of this species found by Mr. Boyd were built in low trees overhanging a river or the bed of a creek. Early on the morning of the 25th of November, 1892, Mr. Boyd was successful in capturing a female sitting on her own two eggs, also one of a Bronze Cuckoo. The nest was built in a shaddock-tree in the garden, a most unusual place, this being the first occasion on which he has ever found the nest not overhanging a bank or stream. Subsequently Mr. Boyd obtained a nest with two fresh eggs on the 9th of December, and another on the 17th with three fresh eggs in it. Occasionally three eggs are laid for a sitting, but two is the usual number.

From Mr. Boyd I have obtained several nests and sets of eggs for description, also the female that was captured on the nest. The nests of *Gerygone magnirostris* are long pendent structures varying from sixteen to twenty-four inches in length, the drooping end of a nearly leafless twig being covered with an irregular layer of nest-material about 2½ inches in diameter and from 9 to 12 inches in length before the nest proper is commenced. This is of a domed form, with a protecting hood well concealing the narrow entrance, and terminating at the lower extremity of the dome in a beard or tail which is typical of the nests of this genus. They are composed of shreds of bark, cocoanut fibre, dried grasses and weeds, skeletons of leaves, and the silky covering of spiders' nests, all matted together, and resembling more a hanging mass of débris left by the floods than a nest. The interior cavities of the nests are small and are warmly lined with feathers. A typical nest measures as follows :—total length 22 inches; from the top of the covered portion of the stem on which it is built to the swelling of the dome 10 inches; domed portion or nest proper, length 7 inches, breadth 5 inches; beard or tail underneath dome 5 inches; entrance to nest 1 inch in diameter; interior cavity, height 3 inches and a quarter, breadth 2 inches and a quarter; base of interior portion of protecting hood over entrance, 2 inches. The eggs vary in shape from oval to elongate-oval, and are of a rich pinkish white, which is almost obscured by exceedingly minute freckles and dots of pinkish red, becoming thicker towards the larger end, where, in some instances intermingled with a few spots of dull purplish grey, an indistinct zone is formed. Others have their markings equally distributed over the shell, with one or two fine hair-lines or small coalesced patches on the larger end. The set of two on which the female was captured measure alike 0·7 × 0·46 inch; a set of three taken on the 1st of January, 1892, (A) 0·69 × 0·5 inch, (B) 0·67 × 0·47 inch, (C) 0·67 × 0·49 inch; a set of two taken on the 10th of October, 1892, (A) 0·65 × 0·48 inch, (B) 0·65 × 0·47 inch.

Gould describes this species as having all the under surface white, tinged with brownish buff, and the base of the lower mandible pearl-white. In the specimen forwarded the throat is comparatively white, and the bill is of a uniform deep olive-black. This species is often the foster-parent of one of the Bronze Cuckoos, the eggs of which are of a deep olivaceous brown, minutely marked with small black dots on the larger end, and not unlike the eggs of *Lamprococcyx plagosus*, but larger, darker, and the surface of the shell smooth and glossy. Three Cuckoo's eggs taken from different nests of *Gerygone magnirostris* measure as follows:—(A) 0·83 × 0·55 inch, (B) 0·78 × 0·53 inch, (C) 0·8 × 0·53 inch. The average measurement of six eggs of *L. plagosus* taken from nests in the neighbourhood of Sydney is 0·72 inch in length by 0·51 inch in breadth.

XXXVII.—*Notes on the Synonymy of some Palæarctic Birds.*

By H. E. Dresser, F.Z.S., F.L.S.

I. Emberiza saharæ.

Having recently been busy with the synonymy of some of the Palæarctic birds, I have had occasion investigate the original description of *Emberiza saharæ*. Dr. Sharpe (Cat. B. Brit. Mus. xii. p. 563) gives it as "Tristram, Ibis, 1859, p. 295;" but this is clearly an error, for the species was known by that name several years before 1859, and Canon Tristram certainly did not there describe it, or claim to do so—he merely included it in his list of Algerian birds as "*Fringillaria saharæ* of Bonaparte," and remarked on the differences between it and *Emberiza striolata*. The earliest reference to the bird that I can find is that of Malherbe, who in his list of the birds of Algeria (1855) attributed the name to Levaillant, jr., as "*Emberiza sahari*, Levaill., jr., Expl. sc. Alg., Ois. pl. ix. bis, fig. 2," and in his preface, referring to this work, writes: "'L'Exploration scientifique de l'Algérie,' dont il n'a paru, pour l'ornithologie, que quinze planches, sans aucun texte, paraît malheureusement ne pas devoir se continuer." This shows clearly that the plate of this Bunting, but not the letterpress, had been issued some time previous to 1855, and therefore it became necessary to ascertain the date when this plate was published. For this purpose I commenced a systematic search amongst the French booksellers' trade-catalogues, and notices of works published, between 1848 (when the first portion of the Nat. Hist. of the 'Expl. scient. de l'Algérie' was issued) and 1855, without any result beyond ascertaining that the first instalment of the Vertebrates ("Reptiles et Poissons," par A. Guichenot) was issued, in one fasciculus, in 1850. My next step was to hunt amongst the libraries, in order to ascertain if any copy of this fasciculus existed with the original covers. The result was that I fortunately discovered a copy of this fasciculus, or volume, at the British Museum, bound in the original paper cover in which it was issued. I thus ascertained that this fasciculus contained the letterpress of the "Reptiles et Poissons," together with the whole of the plates of Vertebrates, Mammals, Birds, Reptiles, and Fishes, and was dated on the cover 1850. Thus the synonymy of the Bunting in question will stand as follows:—

Emberiza sahari, Levaillant, jr., Exploration scientifique de l'Algérie, Atlas, Oiseaux, pl. ix. bis, fig. 2 (1850).

"*Emberiza sahari*, Levaill., jr.," Malherbe, Faune Orn. de l'Algérie, in Bull. Soc. d'Hist. Nat. de la Moselle, No. 7, p. 26, sep. cop. p. 21 (1855).

"*Fringillaria sahara* (Levaill. jr.)," Bp. Cat. des Ois. d'Eur. (Parzudaki), p. 18 (1856).

"*Fringillaria sahari*, Levaill. jr.," Loche, Cat. des Mamm. et Ois. observés en Algérie, &c., p. 61 (1858).

"*Fringillaria sahari*, Bp.," Cat. des Produits de l'Algérie, p. 85 (1858).

Emberiza saharæ, Tristram, Ibis, 1859, p. 34.

"*Fringillaria saharæ*, Bp.," Tristram, Ibis, 1859, p. 295.

Fringillaria sahara, Loche, Expl. scient. de l'Alg., Hist. Nat. des Ois. i. p. 182 (1867).

No formal description of this Bunting appears to have been published previous to that by Loche in 1867. There appears to be no doubt that Levaillant was selected to write the Mammals and Birds for the Expl. scient. de l'Algérie, and Carus and Engelmann in their 'Bibliotheca Zoologica,' which appeared in 1861, referring to that work, cite Levaillant as the author of the "Mammifères et Oiseaux." But Levaillant seems to have ceased to be a member of the Commission in 1851, as on the titlepage of a pamphlet * issued by him in that year (for the loan of which I am indebted to Professor Newton) he designates himself as ex-member of the Commission.

In order to save future workers the trouble of reference to Levaillant's work, I append herewith a list of the plates of birds contained in it, 15 in number, together with the corresponding names as they now stand, added where they differ from those which he gives :—

Plate 1. *Falco punicus*, Levaill.
1 bis. *Le Sacre*, Belon. = *Falco feldeggi*, Schlegel.
2. *Falco belisarius*, Levaill. = *Aquila rapax* (Temm.).
3. *Falco cirtensis*, Levaill. = *Buteo desertorum* (Daud.).
4. *Strix numida*, Levaill. = *Carine glaux* (Savigny).
5. *Picus algirus*, Levaill. = *Gecinus vaillanti* (Malh.).
6. *Garrulus atricapillus*, Is. Geoffr. = *Garrulus cervicalis*, Bp.
7. figs. 1, 1 *a*. *Fringilla africana*, Levaill. = *Fringilla spodiogena*, Bp.
fig. 2. *Parus cæruleanus*, Malh. = *Parus ultramarinus*, Bp.
8. *Pica mauritanica*, Malh.
9. *Picus numidicus*, Malh.
9 bis. fig. 1. *Malurus numidicus* = *Argya fulva* (Desf.).
fig. 2. *Emberiza sahari*, Levaill. = *Emberiza saharæ*, Levaill.
10. *Otis arabs*, Linn.
11. *Otis tarda*, Linn.
12. *Ibis calvus*, Smith = *Ibis comata* (Rüpp.).
13. *Larus audouini*, Peyr.

II. MONTIFRINGILLA ALTAICA.

In the Catalogue of Birds in the Brit. Mus. (xii. p. 266),

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* 'Introduction à l'Histoire des Mammifères et des Oiseaux du Nord de l'Afrique, etc., par Levaillant, chef de bataillon, ex-membre de la Commission de l'exploration du Nord de l'Afrique.' Philippeville, 1851. 8vo. pp. 69.

Dr. Sharpe gives Eversmann's Mountain-Finch under the name of "*Montifringilla sordida* (Stoliczka)" (J. As. Soc. Beng. xxxvii. p. 63, 1868), and, speaking of Eversmann's name "*Fringillauda altaica*," says:—"This name is quoted by Severtzoff (Ibis, 1883, p. 60), but I have not been able to find where it was published. I have very little doubt that the oldest name of the present species is *M. murrayi* (Blyth, J. As. Soc. Beng. xxxii. p. 458, 1863); but, as Mr. Hume is a little uncertain on the subject, I have adopted the one by which it is best known to ornithologists."

As a matter of fact, Eversmann's description was published in 1848 (*Fringilla altaica*, Eversmann, Bull. Soc. Imp. Nat. Mosc. Bd. xxi. p. 223), and consequently antedates both Blyth's and Stoliczka's names by many years. The correct name of this bird is therefore *Montifringilla altaica* (Eversm.), if it is to be placed in the genus *Montifringilla*. In the same volume (p. 219) Eversmann describes *Alauda longipennis*, and in this instance Dr. Sharpe (Cat. B. Brit. Mus. xiii. p. 581) gives the reference correctly.

I observe that Dr. Sharpe (*tom. cit.* p. 258) cites the genus *Fringalauda* as "*Fringillauda*, Hodgs., in Gray's Zool. Misc. p. 84 (1844);" but this is incorrect. Hodgson defined the genus most fully in 1836 (As. Res. xix. p. 158), and at the same time described *Fringalauda nemoricola*, this being his type of the genus, but writes it "*Fringalanda*," which was evidently a misprint for "*Fringalauda*." Blyth in 1844 (Journ. As. Soc. Beng. xiii. part 2, p. 954) noticed this misprint, and proposed to alter the name to *Fringillauda*. In Gray's Zool. Misc. p. 84, the reference is in a bare list of birds, without any definition of the genus, as "*Fringilauda nemoricola*." I may add that Mr. Waterhouse, in his recently-published list of the Genera of Birds, gives all these references quite correctly.

III. LANIUS BOGDANOWI.

In the "Bericht über die Februar-Sitzung der allgemeinen deutschen ornithologischen Gesellschaft zu Berlin, No. 2 (1893)," just received, I observe that Herr Schalow makes some remarks on *Lanius raddei*, mihi, and considers it probably identical with *Otomela bogdanowi*, Bianchi, Mél. biolog. du Bull. de l'Acad. Imp. des Sci. St. Pétersbourg, tome xii. p. 581 (1886). In this he is quite correct, for Mr. Pleske, of St. Petersburg, who was at my house not long ago, examined my specimen, and told me that it was identical with Bianchi's bird, of which I was not previously aware, not having seen Bianchi's description. The correct name of this Shrike is consequently *Lanius bogdanowi* (Bianchi).

IV. BUTEO MENETRIESI.

In the same "Bericht" Mr. Ehmcke describes as new a Buzzard from the Gumbinnen Kreis, under the name *Buteo zimmermannæ*, respecting which Mr. Matschie expresses the opinion that this form has been already referred to, and believes it to be *Buteo minor* of Ludw. Brehm (Naumannia, 1855, p. 268, descr. nulla). This I doubt, but it may possibly be *Buteo minor*, Heugl., Syst. Uebers. p. 5 (1856), which von Heuglin describes as follows:—"Gleicht dem *F. buteo* in Färbung vollkommen; ist aber schlanker und wenigstens um ¼ kleiner." There is, however, I think, no doubt that it is the species described by Bogdanow in his work on the Birds of the Caucasus ('Ptitsui Kavkaza,' p. 45, 1879) under the name *Buteo menetriesi*. This form is said to be tolerably common in Russia, and I have received several specimens of it from Archangel. It is a dark rufescent form of *Buteo desertorum*, and in my article on that species (B. of Eur. v. pp. 457–461, 1875) I referred to it a specimen from Archangel, from which indeed I cannot think *Buteo menetriesi* should be separated, even subspecifically.

As Professor Bogdanow's description is in Russian the following translation will probably be welcome to most non-Russian ornithologists:—"*Female* rather larger than the *male*; upper parts with the feathers dark brown, broadly margined with rufous, thus giving the back the appearance of being rufous with dark brown blotches; throat and sides of the head whitish red, striped with dark brown; feathers on the underparts generally with a long and large central chestnut-red blotch, on which the black shaft of the feather shows prominently; some feathers have two blotches—a basal one, brown, and a terminal one of a chestnut-red or reddish brown; portion of the feather bordering and between the blotches light red or sandy yellowish red, becoming paler as the feather gets worn; feathers on the abdomen with the rufous-white portion more extensive, the spots assuming a diagonal direction, forming two or three bars on each feather; under tail-coverts pale rufous, with pale chestnut stripes; wings blackish brown, the outer web of the primaries tinged with grey, the inner broad portion of the web white; secondaries brown on the outer web, the inner web also white, with broad diagonal bars, the innermost light rufous; scapulars brown, with broad rufous margins; thigh-feathers dark rufous, with black shafts; tail rich foxy-red; central rectrices clear rufous edged with whitish, with a broad terminal and two, three, or four narrower bars; external rectrices with the outer web blackish brown, tinged with grey or reddish brown; the inner web rufous, with here and there brownish-black transverse bars all along the feather, the terminal bar much wider; shafts of the feathers white; seen from below the tail is light brown with a whitish tinge, only one or two terminal bars being apparent, the others not being visible. The coloration of the tail is the most characteristic distinction, by which it may also be distinguished on the wing. Beak black, cere yellow, iris yellow, legs yellow, claws black."

The habitat given by Bogdanow is "near Lake Azen-am; valley of the White River (Belai), Psekoups and Tybinsk; according to Nordmann, in Abkhasia and Mingrelia; and according to Michaloffsky, in Transcaucasia."

XXXVIII.—*On the Avifauna of Mount Dulit and the Baram District in the Territory of Sarawak.* By Charles Hose, F.Z.S.

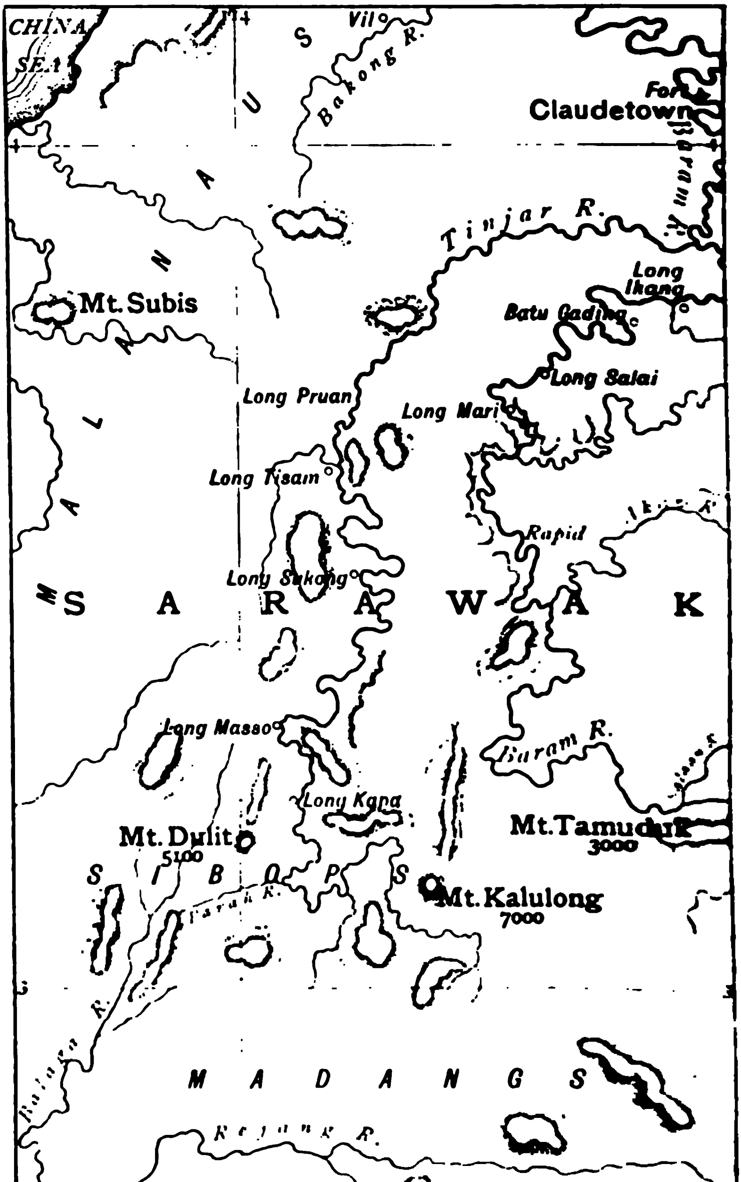
(Plates X., XI.)

I first began to collect animals in Borneo in 1887, being stimulated to do so by my friend Mr. A. H. Everett, and as I was stationed far in the interior of the island I had opportunities of exploring several portions of the highlands which had previously been unvisited by Europeans. From the very first I received the kindest encouragement from His Highness the Rajah, and it has been a double pleasure to me to occupy my spare time in the exploration of some of the outlying mountains of the Baram District, knowing that the Rajah was as interested as myself in the results of my expeditions. So far the visit I made to Mount Dulit has turned out very satisfactorily, and the novelties have proved to be of remarkable interest; but of course much still remains to be done upon that mountain, and I expect to add considerably to the present list of birds which I have found inhabiting it. I have added some notes upon the low-country birds also, and I hope that the few remarks made on the distribution of some of the species will be of interest.

I should like to acknowledge in the warmest manner the assistance and encouragement I have received from my friends at the British Museum, from Dr. Günther, Dr. Bowdler Sharpe, and Mr. Ogilvie Grant, who have helped me with the birds and have determined the species for me. The mammals have also been named for me by Mr. Oldfield Thomas.

For the position of Mount Dulit and the neighbouring portions of Sarawak territory, I must refer my readers to the 'Geographical Journal' for March 1893, where a full account of my trip to the mountain is given. As will be seen by the accompanying map (p. 382), which is taken from that in the 'Geographical Journal,' Dulit is situated in Lat. N. 3° 15′ and Long. E. 114°.

I do not consider my work on Dulit to be yet nearly



Part of Northern Sarawak.

finished, and I hope on my return to explore the other parts of the mountain. For that reason I have not at present attempted a comparison of the avifauna of Dulit with that of Kina Balu, as given by Dr. Bowdler Sharpe in 'The Ibis' for July 1890. All one can say at present is that many species appear to range higher on Dulit than they do on Kina Balu, the avifauna of which was so thoroughly studied by my friend Mr. Whitehead.

I have given references to Dr. Sharpe's papers on the birds of Dulit, and in the order of classification I have followed Mr. Everett's useful list of Bornean birds in the 'Journal of the Straits Branch of the Asiatic Society' for 1889.

Family TURDIDÆ.

1. GEOCICHLA EVERETTI.

Geocichla everetti, Sharpe, Ibis, 1892, pp. 323, 431.

Discovered on my first expedition to the mountain. It lives in the damp moss-covered top of Dulit.

2. ERITHACUS CYANE.

Erythacus cyaneus (Pall.); Everett, t. c. p. 98; Sharpe, Ibis, 1892, p. 432.

This is a bird of the low country, and is not found at any great height on the mountain.

3. MYIOPHONEUS BORNEENSIS.

Myiophoneus borneensis, Slater; Everett, t. c. p. 98; Sharpe, Ibis, 1892, p. 432.

This Whistling Thrush occurs from 3000 to 5000 feet on Dulit. I also found it breeding, the nest being placed on a stump; there were two young birds in the nest, one of which my Dyak hunter ate, and the other is now in the British Museum. It is one of the few Bornean birds which are good whistlers. Native name "Blankin."

4. COPSYCHUS MUSICUS.

Copsychus musicus (Raffl.); Sharpe, Cat. B. vii. p. 65; Everett, t. c. p. 99.

Found on the lower portions of the mountain and on clearings only throughout the district. Also a good songster. Makes a nest like a Robin in a stump or in a bank.

5. TRICHIXUS PYRRHOPYGUS.

Trichixus pyrrhopygus, Less.; Sharpe, Cat. B. vii. p. 32; Everett, t. c. p. 99.

Occurs on Dulit up to 2000 feet.

6. CITTOCINCLA SUAVIS.

Cittocincla suavis, Scl.; Sharpe, Cat. B. vii. p. 87; Everett, t. c. p. 100.

Extends all through the low country, and I have found it as high as 3000 feet on Dulit, and again on Batu Song to 2000 feet. The native name is "Nandak," and the species is an important "omen" bird.

7. CITTOCINCLA STRICKLANDI.

Cittocincla stricklandi (Motl. & Dillw.); Sharpe, Cat. B. vii. p. 88; Everett, t. c. p. 100.

Ascends Dulit to 2000 feet, up to which elevation it is tolerably common. A great frequenter of mountain-streams. So far as I know this bird never occurs south of Bintulu.

8. HYDROCICHLA FRONTALIS.

Hydrocichla frontalis (Blyth); Sharpe, Cat. B. vii. p. 321; Everett, t. c. p. 101.

Up to 1000 feet on Dulit. Native name "Ensing Batu."

9. HYDROCICHLA RUFICAPILLA.

Hydrocichla ruficapilla (T.); Sharpe, Cat. B. vii. p. 319; Everett, t. c. p. 101.

Also found up to 1000 feet, but common throughout the low country.

10. ORTHOTOMUS RUFICEPS.

Orthotomus ruficeps (Less.); Sharpe, Cat. B. vii. p. 224; Everett, t. c. p. 101.

This red-headed Tailor-bird does not ascend beyond 1000 feet. The nest is a pretty structure placed below a leaf, which is drawn over it.

11. ORTHOTOMUS CINERACEUS.

Orthotomus cineraceus, Blyth; Sharpe, Cat. B. vii. p. 325; Everett, t. c. p. 102.

Very common in the low country, particularly in cleared land and young jungle. Only occurs within the 1000-feet limit of the base of the mountain.

12. BURNESIA SUPERCILIARIS.

Burnesia superciliaris (Salvad.); Sharpe, Cat. B. vii. p. 206; Everett, t. c. p. 102.

Native name "Enkaririk." Common everywhere below the 1000-feet limit.

Family TIMELIIDÆ.

13. GARRULAX SCHISTOCHLAMYS.

Garrulax schistochlamys, Sharpe; Everett, t. c. p. 103.

Occurs between 3000 and 4000 feet. On my second ascent I got the young of this species. There were three of them in the nest. Native name "Empulu arang."

14. RHINOCICHLA TREACHERI.

Rhinocichla treacheri, Sharpe; id. Cat. B. vii. p. 453; Everett, t. c. p. 103.

From 3000 to 5000 feet. Very common. This species feeds on some kind of berry, which passes into the intestines, and there forms a kind of blue dye, which pervades the whole abdomen and dyes the fingers blue when the bird is being skinned. On account of this disagreeable peculiarity the natives will not eat the bird.

15. ALLOCOTOPS CALVUS.

Allocotops calvus, Sharpe; Everett, t. c. p. 104.

♀ juv. Dulit, 5000 feet, May 1892.

As in the typical specimens obtained by Mr. Whitehead, the young bird sent differs from the adult in its feathered crown. This bird is met with from 4000 to 5000 feet. It has a peculiar kind of note, resembling a hoot. Three or four are generally found in company.

16. POMATORHINUS BORNEENSIS.

Pomatorhinus borneensis, Cab.; Sharpe, Cat. B. vii. p. 411. Everett, t. c. p. 104.

Ascends the mountain to 2000 feet, and is fairly common in the low country.

17. STACHYRIS BORNEENSIS.

Stachyris borneensis, Sharpe, Ibis, 1887, p. 449; Everett, t. c. p. 105.

Fairly common about 4000 feet.

18. CYANODERMA BICOLOR.

Cyanoderma bicolor (Blyth); Everett, t. c. p. 105.

Mixornis bicolor, Sharpe, Cat. B. vii. p. 581.

Common all through the low country and at the foot of Dulit.

19. CHLOROCHARIS EMILIÆ.

Chlorocharis emiliæ, Sharpe, Ibis, 1888, p. 392, pl. xi. fig. 1; Everett, t. c. p. 105.

Very rare on Mount Dulit, and met with only between 4000 and 5000 feet. Only two specimens, as yet, have been procured.

20. ALCIPPE CINEREA.

Alcippe cinerea, Blyth; Sharpe, Cat. B. vii. p. 622. Everett, t. c. p. 106.

Found on Dulit at about 3500 feet. This bird is usually seen about pools and waterfalls, and was named by our party "the Bather," because it came every day with the utmost regularity about 3 o'clock to bathe in a little pool near our camp.

21. STAPHIDIA EVERETTI.

Staphidia everetti, Sharpe, Ibis, 1887, p. 447; Everett, t. c. p 107.

Tolerably common on Dulit at 2000 feet. Whenever a clearing was made round a hut in the dense forest this little Jungle-Tit would immediately make its appearance and frequent the neighbourhood in the most inquisitive manner.

22. MACRONUS PTILOSUS.

Macronus ptilosus, T. & S.; Sharpe, Cat. B. vii. p. 583; Everett, t. c. p. 108.

Common up to 1000 feet. It is called by the natives "Enkeririk Landak" (porcupine), because of the bristly plumage on the back, which really has a resemblance to the quills of a tiny porcupine. It has likewise a very curious note, like "p'wish," which it utters with every movement, accompanying the notes by raising its feathers in a jerky manner.

23. TURDINUS CANICAPILLUS.

Turdinus canicapillus, Sharpe, Ibis, 1887, p. 450; id. Ibis, 1892, p. 433; Everett, t. c. p. 108.

High up on Dulit, occurring at about 5000 feet.

24. TURDINUS ATRIGULARIS.

Turdinus atrigularis (Bp.), Sharpe, Cat. B. vii. p. 549; Everett, t. c. p. 109.

A low-country bird, but found up to 4000 feet on Dulit. It creeps about beneath the roots of trees, and is a thorough ground-bird in its mode of life. The native name is "Gendang plandok." This species has a pleasant whistling note, which is not usual among the Timeliidæ of Borneo.

25. DRYMOCATAPHUS CAPISTRATOIDES.

Drymocataphus capistratoides (T.), Sharpe, Cat. B. vii. p. 555; Everett, t. c. p. 109.

Foot of the mountain, ranging to about 1000 feet.

26. TRICHOSTOMA ROSTRATUM.

Trichostoma rostratum, Blyth; Sharpe, Cat. B. vii. p. 562; Everett, t. c. p. 109.

Low-country bird, ranging about 1000 feet on Dulit.

27. KENOPIA STRIATA.

Kenopia striata (Blyth); Sharpe, Cat. B. vii. p. 573; Everett, t. c. p. 109.

Found in the Baram district and extends up Dulit to a low elevation.

28. PTILOPYGA RUFIVENTRIS.

Ptilopyga rufiventris (Salvad.); Sharpe, Cat. B. vii. p. 585; Everett, t. c. p. 110.

Common in the low country, not extending above 1000 feet.

29. PTILOPYGA LEUCOGRAMMICA.

Ptilopyga leucogrammica (Bp.); Sharpe, Cat. B. vii. p. 586; Everett, t. c. p. 110.

By no means common. Found on Dulit up to 2000 feet. Its habits are similar to those of *Turdinus atrigularis*.

30. ANUROPSIS MALACCENSIS.

Anuropsis malaccensis (Hartl.); Sharpe, Cat. B. vii. p. 588; Everett, t. c. p. 110.

Common in the low country.

31. EUPETES MACROCERCUS.

Eupetes macrocercus, Temm.; Sharpe, Cat. B. vii. p. 338.

Mr. Everett first found this species in Borneo on Mount Penrisen (*cf.* Sharpe, Ibis, 1890, p. 367). It occurs on Mount Dulit at 4000 feet, and is always found on the peaks of the mountains, living an isolated life in these places. My native collectors met with it on Batu Song, where it evidently breeds, as they got the young birds. Their elevations are given as from 4000 to 7000 feet, and though these figures must be received with caution, it may be taken for certain that the species inhabits the highest peaks on Batu Song.

The young birds differ considerably from the adults. They are much duller and browner in colour, and the crown is reddish brown instead of bright chestnut. The throat is white and the under surface is slaty black. The sexes appear to be alike in colour, and a young female is gaining the adult plumage by a moult.

32. TURDINULUS EXSUL.

Turdinulus exsul, Sharpe, Ibis, 1888, p. 479; Everett, t. c. p. 111.

Discovered on Kina Balu by Mr. Whitehead, at 4000 feet. I found it on Dulit at the same elevation. It is exceedingly rare, and is very hard to find in the jungle, owing to its small size, dull coloration, and creeping habits.

Family BRACHYPODIDÆ.

33. IOLE OLIVACEA.

Iole olivacea, Blyth; Sharpe, Cat. B. vi. p. 55; Everett, t. c. p. 111.

Common everywhere, and ascends Dulit to about 3000 feet.

34. HEMIXUS MALACCENSIS.

Hemixus malaccensis (Blyth); Sharpe, Cat. B. vi. p. 52; Everett, t. c. p. 111.

A low-country species, common up to 2000 feet.

35. HEMIXUS CONNECTENS.

Hemixus connectens, Sharpe, Ibis, 1887, p. 446; Everett, t. c. p. 111.

Found on Dulit at 3000 feet, and met with also on Batu Song. It has a curious habit of puffing out its throat-feathers every time it utters its note, which is a kind of "*sh-sh.*"

36. PINAROCICHLA EUPTILOSA.

Pinarocichla euptilosa, Sharpe, Cat. B. vi. p. 62; Everett, t. c. p. 112.

Found in the low country and ascending Dulit up to 1000 feet.

37. MICROPUS MELANOCEPHALUS.

Micropus melanocephalus (Gm.); Sharpe, Cat. B. vi. p. 65; Everett, t. c. p. 112.

Common in low country and ascending Dulit up to 1000 feet.

38. MICROPUS MELANOLEUCUS.

Micropus melanoleucus (Eyton); Sharpe, Cat. B. vi. p. 69; Everett, t. c. p. 112.

Common everywhere through the low country. It whistles at night, and is one of the species which always come to clearings and round about the houses. Native name "Tiup api."

39. CRINIGER PHÆOCEPHALUS.

Criniger phæocephalus, Hartl.; Sharpe, Cat. B. vi. p. 74; Everett, t. c. p. 112.

Common in the low country. Native name "Empulloh lilin."

40. CRINIGER DIARDI.

Criniger diardi (T.); Sharpe, Cat. B. vi. p. 76; Everett, t. c. p. 113.

Similar to *C. phæocephalus*, but having a yellow-tipped tail. It has the same distribution as that species, being also one of the low country birds.

41. CRINIGER GUTTURALIS.

Criniger gutturalis (Bp.); Sharpe, Cat. B. vi. p. 80; Everett, t. c. p. 113.

This is a low-country bird, and common everywhere. Native name "Empulloh." It is fond of inflating its throat and puffing out the feathers.

42. CRINIGER RUFICRISSUS.

Criniger ruficrissus, Sharpe; id. Cat. B. vi. p. 81; Everett, t. c. p. 113.

This species represents the preceding bird on the mountain above 1000 feet.

43. CRINIGER FINSCHI.

Criniger finschi, Salvad.; Sharpe, Cat. B. vi. p. 84; Everett, t. c. p. 113.

Found on Dulit and Batu Song at 3000 feet.

44. TRICHOPHOROPSIS TYPUS.

Trichophoropsis typus, Bp.; Sharpe, Cat. B. vi. p. 88; Everett, t. c. p. 113.

Common everywhere in low country, but does not ascend the mountains beyond the base.

45. TRICHOLESTES CRINIGER.

Tricholestes criniger (Blyth); Sharpe, Cat. B. vi. p. 80; Everett, t. c. p. 113.

Found on Dulit and Batu Song up to a moderate height.

46. TRACHYCOMUS OCHROCEPHALUS.

Trachycomus ochrocephalus (Gm.); Sharpe, Cat. B. vi. p. 93; Everett, t. c. p. 114.

This bird is common along the rivers and is called by the natives 'Maki Boyah' or 'Alligator Bird,' a name given to it from its supposed habit of annoying the alligator.

47. PYCNONOTUS ANALIS.

Pycnonotus analis (Horsf.); Sharpe, Cat. B. vi. p. 140; Everett, t. c. p. 114.

Common all through the low country, but does not ascend the mountains.

48. PYCNONOTUS PLUMOSUS.

Pycnonotus plumosus, Blyth; Sharpe, Cat. B. vi. p. 152; Everett, t. c. p. 115.

Common in low country.

49. PYCNONOTUS SIMPLEX.

Pycnonotus simplex, Less.; Sharpe, Cat. B. vi. p. 153; Everett, t. c. p. 115.

Also inhabits the low country.

50. PYCNONOTUS SALVADORII.

Pycnonotus salvadorii, Sharpe, Cat. B. vi. p. 401; Everett, t. c. p. 115.

This little Bulbul ascends the mountain to about 2000 feet. Like its congeners, it is a somewhat uninteresting bird. One of my specimens from Batu Song has the throat pale yellow instead of grey; it seems to be adult.

51. RUBIGULA WEBBERI.

Rubigula webberi (Hume); Sharpe, Cat. B. vi. p. 171; Everett, t. c. p. 115.

This bird occurs on Dulit and Batu Song up to 4000 feet. It is a fruit-eating bird, and we got several on one occasion on a berry-bearing tree.

52. RUBIGULA PAROTICALIS.

Rubigula paroticalis (Sharpe); id. Cat. B. vi. p. 170; Everett, t. c. p. 115.

This grey-breasted Bulbul is found up to 3000 feet on Mount Dulit.

53. RUBIGULA MONTIS.

Otocompsa montis (Sharpe); id. Cat. B. vi. p. 162.

Rubigula montis, Everett, t. c. p. 115.

A mountain bird, occurring on Dulit at 5000 feet.

54. ÆGITHINA VIRIDISSIMA.

Ægithina viridissima (Bp.); Sharpe, Cat. B. vi. p. 6; Everett, t. c. p. 116.

A low-country bird, not very common.

55. CHLOROPSIS ZOSTEROPS.

Chloropsis zosterops (Vig.); Sharpe, Cat. B. vi. p. 24; Everett, t. c. p. 116.

Common all over the low country and on Dulit up to 3000 feet. Native name "Cunchit."

56. CHLOROPSIS CYANOPOGON.

Chloropsis cyanopogon (T.); Sharpe, Cat. B. vi. p. 32; Everett, t. c. p. 116.

Found in the low country, not ascending Dulit beyond 1000 feet.

57. CHLOROPSIS VIRIDINUCHA.

Chloropsis viridinucha, Sharpe; id. Cat. B. vi. p. 31, pl. i.; Everett, t. c. p. 117.

This little Green Bulbul is fairly common everywhere. It reaches 3000 feet on Dulit.

58. CHLOROPSIS KINABALUENSIS.

Chloropsis kinabaluensis, Sharpe, Ibis, 1887, p. 445; Everett, t. c. p. 117.

I met with this bird on Dulit from 1000 to 5000 feet, and found it only in old jungle, which the bird evidently prefers.

59. IRENA CRINIGERA.

Irena criniger, Sharpe, Cat. B. iii. p. 267; Everett, t. c. p. 117.

Ascends Dulit to 2000 feet. It is a very plentiful bird in the low country, and one of the most beautiful species we have. The young males take two years to get the full brilliant plumage, and after the first moult they have more or less blue and black plumes. These generally appear first on the vent and under tail-coverts, afterwards being sprinkled over the back, and at the second moult the perfect plumage is assumed.

Family Oriolidæ.

60. Oriolus xanthonotus.

Oriolus xanthonotus, Horsf.; Sharpe, Cat. B. iii. p. 213; Everett, t. c. p. 119.

This little Oriole is common all through the low country, and on Dulit up to 2000 feet. It has rather a pretty whistle, and by imitating its note it is possible to decoy it quite close to one.

61. Oriolus hosii. (Plate X.)

Oriolus hosii, Sharpe, Bull. B. O. C. no. ii. p. iv; Ibis, 1893, p. 117.

This new and remarkable species was found by me on the top of Mount Dulit at 5000 feet, living in the damp moss-covered stunted jungle. I had not much opportunity for watching its habits.

Family Sittidæ.

62. Dendrophila corallipes.

Dendrophila corallipes, Sharpe, Ibis, 1888, p. 479; Everett, t. c. p. 120.

This pretty Nuthatch is a low-country bird, ascending Dulit to 3000 feet.

Family Laniidæ.

63. Lanius lucionensis.

Lanius lucionensis, L.; Everett, t. c. p. 121.

This Shrike is a monsoon visitor, and is found all through the low country, where it is by no means rare. Its habits resemble those of the ordinary English Butcher-bird.

64. Pityriasis gymnocephala.

Pityriasis gymnocephala (T.); Everett, t. c. p. 121.

Dr. Sharpe thinks that this bird is a Shrike, but Count

Salvadori considers that it is a Starling, akin to *Gracula*. When I go back I intend to investigate the life-history of this curious species more closely; but meanwhile my notes on its habits may be interesting, and at present I am inclined to agree with the idea thrown out by Count Salvadori. First of all it selects a hole in a tree for its nesting-place. I once felled a tree in which was a nest, but in falling all the eggs were hopelessly smashed, and I am only speaking from recollection as to what they were like. I did not know at the time of the interest attaching to the species, and so did not take particular notice of the colour of the eggs, but, to the best of my recollection, they were of a creamy or bluish white.

This bird is particularly fond of a small berry, which is bluish black in colour and about the size of a pea. It shells the fruit off the stone with its bill and devours the pulp. In habits it is decidedly gregarious, and I found that when one was shot, the others very foolishly flew down to their dead comrade. It has a very harsh note, but at times it utters a whistle like that of a Mynah. The native name is "Tiong balli," which means "False Mynah," "Tiong" being the native name for the Mynah.

I procured several young birds just able to fly, and they presented some very curious differences from the adults. When quite young the head is bald, but after leaving the nest some scanty red feathers, or red-and-black ones, make their appearance on the crown, which is otherwise quite smooth. The red on the hind neck is interspersed with black spots. The eyelid in the young bird is black, with small red feathers round the rim: none of this is seen in the old bird. Instead of being black, the ear-coverts are red like the cheeks, the plumage is soft, not stiffened, and the feathers of the fore neck likewise are not stiffened as in the old bird. The whole of the centre of the breast is red; but the thigh-feathers are black instead of being red.

65. TEPHRODORNIS GULARIS.

Tephrodornis gularis (Raffl.); Sharpe, Cat. B. iii. p. 278; Everett, t. c. p. 121.

Common in gardens in any of the cleared parts of the low country, especially along the coast.

66. HYLOTERPE GRISOLA.

Hyloterpe grisola (Blyth) ; Everett, t. c. p. 122.

Found in the low country only.

67. HYLOTERPE HYPOXANTHA.

Hyloterpe hypoxantha, Sharpe, Ibis, 1887, p. 451 ; Everett, t. c. p. 122.

Occurs on Dulit at 3000 feet.

68. HEMIPUS CAPITALIS.

Hemipus picatus, Sykes ; Everett, t. c. p. 123.

Hemipus capitalis (M'Clell.) ; Oates, Faun. Brit. Ind., Birds, i. p. 472.

Occurs on Dulit at 4000 feet.

Family DICRURIDÆ.

69. CHIBIA BORNEENSIS.

Chibia borneensis, Sharpe, P. Z. S. 1879, p. 246 ; Everett, t. c. p. 123.

Found on Mount Dulit from 3000 to 4000 feet.

70. CHAPTIA MALAYENSIS.

Chaptia malayensis, Blyth ; Sharpe, Cat. B. iii. p. 244 ; Everett, t. c. p. 124.

Inhabits only the low country.

71. BUCHANGA STIGMATOPS.

Buchanga stigmatops, Sharpe, P. Z. S. 1879, p. 247.

Found on Dulit at 5000 feet and very rare.

72. DISSEMURUS PLATURUS.

Dissemurus platurus (V.) ; Everett, t. c. p. 124.

All over the low country, ascending Dulit to 2000 feet and Mount Batu Song to 3000 feet.

Family CAMPOPHAGIDÆ.

73. ARTAMIDES NORMANI.

Artamides normani, Sharpe, Ibis, 1889, p. 190.

The young bird has a good deal of white speckling on the breast. Found on Dulit at 4000 feet.

74. Artamides sumatrensis.

Artamides sumatrensis (S. Müll.); Sharpe, Cat. B. iv. p. 12; Everett, t. c. p. 125.

A low-country species, which occurs on Dulit up to 2000 feet.

75. Pericrocotus xanthogaster.

Pericrocotus xanthogaster (Raffl.); Sharpe, Cat. B. iv. p. 74.

A low-country bird, not yet met with on Dulit.

76. Pericrocotus montanus.

Pericrocotus montanus, Salvad.; Sharpe, Ibis, 1887, p. 439; Everett, t. c. p. 125.

This Minivet is found on Mount Dulit at 5000 feet.

77. Lalage terat.

Lalage terat (Bodd.); Sharpe, Cat. B. iv. p. 95; Everett, t. c. p. 126.

Common in the low country, but I have not yet seen it on Dulit.

78. Lalage culminata.

Lalage culminata (A. Hay); Sharpe, Cat. B. iv. p. 104; Everett, t. c. p. 126.

This Cuckoo-Shrike is found at the foot of Dulit up to about 1000 feet. It is spread over the low country.

Family Muscicapidæ.

79. Erythromyias muelleri.

Erythromyias muelleri (Blyth); Sharpe, Cat. B. iv. p. 200, pl. iv. fig. 2.

I found this pretty Flycatcher at 5000 feet. It was also met with on Penrisen by Mr. Everett.

80. Muscicapula hyperythra.

Muscicapula hyperythra (Blyth); Sharpe, Cat. B. iv. p. 206; Everett, t. c. p. 127.

I found this little Flycatcher on Dulit at 3000 feet.

81. Xanthopygia narcissina.

Xanthopygia narcissina (T.); Sharpe, Cat. B. iv. p. 249; Everett, t. c. p. 128.

Found in the low country and also on Mount Dulit at 3000 feet.

82. TARSIGER HODGSONI.

Tarsiger hodgsoni (Moore); Sharpe, Cat. B. iv. p. 275; Everett, t. c. p. 128.

This tiny Blue Flycatcher was met with only on Mount Dulit at 4000 feet.

83. HYPOTHYMIS OCCIPITALIS.

Hypothymis occipitalis (Vig.); Sharpe, Cat. B. iv. p. 275; Everett, t. c. p. 128.

Only a low-country bird; not very common.

84. RHIPIDURA ALBICOLLIS.

Rhipidura albicollis (V.); Sharpe, Cat. B. iv. p. 317; Everett, t. c. p. 129.

A mountain bird, occurring on Dulit at about 3000 feet.

85. RHIPIDURA JAVANICA.

Rhipidura javanica, Sparrm.; Sharpe, Cat. B. iv. p. 332; Everett, t. c. p. 129.

Common all through the low country, especially among the young undergrowth.

86. RHIPIDURA PERLATA.

Rhipidura perlata, S. Müll.; Sharpe, Cat. B. iv. p. 328; Everett, t. c. p. 129.

This Fan-tailed Flycatcher occurs on Dulit up to 4000 feet, and at about the same height on Batu Song. Native name "Burong Kanji."

87. TERPSIPHONE AFFINIS.

Terpsiphone affinis (Blyth); Sharpe, Cat. B. iv. p. 349; Everett, t. c. p. 130.

Only in the low country and on Dulit up to 1000 feet. Native name "Lemujan."

88 PHILENTOMA VELATUM.

Philentoma velatum (T.); Sharpe, Cat. B. iv. p. 365; Everett, t. c. p. 130.

This Flycatcher is a low-country species, known to the natives as "Burong Kubok."

89. PHILENTOMA PYRRHOPTERUM.

Philentoma pyrrhopterum (T.); Sharpe, Cat. B. iv. p. 366; Everett, t. c. p. 130.

Also a Flycatcher of the low country.

90. RHINOMYIAS PECTORALIS.

Rhinomyias pectoralis (Salvad.); Sharpe, Cat. B. iv. p. 68; Everett, t. c. p. 130.

In the low country round the foot of the mountain.

91. RHINOMYIAS RUFICRISSA.

Rhinomyias ruficrissa, Sharpe, Ibis, 1887, p. 441; Everett, t. c. p. 131.

Found at 5000 feet on Mount Dulit.

92. CULICICAPA CEYLONENSIS.

Culicicapa ceylonensis (Sw.); Sharpe, Cat. B. iv. p. 369; Everett, t. c. p. 131.

This little Flycatcher is found on Dulit, and also in the low country round about.

93. CRYPTOLOPHA SCHWANERI.

Cryptolopha schwaneri (T.); Sharpe, Cat. B. iv. p. 403; Everett, t. c. p. 131.

Procured on Mount Dulit at 5000 feet.

94. SIPHIA BANYUMAS.

Siphia banyumas (Horsf.); Sharpe, Cat. B. iv. p. 449; Everett, t. c. p. 132.

Occurs on Dulit, where I met with it only at 2000 feet.

95. SIPHIA NIGRIGULARIS.

Siphia nigrigularis, Everett, Ibis, 1891, p. 45.

This is the usual low-country form of Blue Flycatcher. It occurs only at the foot of Mount Dulit.

96. SIPHIA BECCARIANA.

Siphia beccariana (Salvad.); Sharpe, Cat. iv. p 452; Everett, t. c. p. 133.

A young male from Batu Song is interesting as showing the first blue feathers appearing on the back; otherwise it resembles the adult red-tailed female. The species also occurs on Dulit up to 2000 feet. None of these Blue Flycatchers can be called common.

97. SIPHIA EVERETTI.

Siphia everetti, Sharpe, Ibis, 1890, p. 366.

Found on Mount Dulit at 4000 feet, where, however, it is very rare.

Family HIRUNDINIDÆ.

98. HIRUNDO JAVANICA.

Hirundo javanica, Sparrm.; Sharpe, Cat. B. x. p. 91; Everett, t. c. p. 134.

This is the common Swallow of the district, building under the eaves and floors of the bungalows, which, I must remind the reader, are raised off the ground.

Family NECTARINIIDÆ.

99. ÆTHOPYGA TEMMINCKI.

Æthopyga temmincki (S. Müll.); Everett, t. c. p. 135.

I found this red Sun-bird on the top of Dulit at 5000 feet on the small low bushes in the moss.

100. ÆTHOPYGA SIPARAJA.

Æthopyga siparaja (Raffl.); Everett, t. c. p. 135.

This is the low-country Red Sun-bird, and is common in gardens and cleared land.

101. CHALCOSTETHA INSIGNIS.

Chalcostetha insignis (Jard.); Everett, t. c. p. 135.

Found only in the low country.

102. CINNYRIS PECTORALIS.

Cinnyris pectoralis (Horsf.); Everett, t. c. p. 136.

Common in low country. Also on Dulit up to 1000 feet.

103. ANTHOTHREPTES HYPOGRAMMICA.

Anthreptes hypogrammica (S. Müll.); Everett, t. c.p. 136.

Goes to 3000 feet on Mount Dulit.

104. ANTHOTHREPTES SIMPLEX.

Anthreptes simplex (S. Müll.); Everett, t. c. p. 136.

Only found in the low country.

105. ANTHOTHREPTES MALACCENSIS.

Anthreptes malaccensis (Scop.); Everett, t. c. p. 137.

This bird is called "Cunchit Malacca." It is a low-country species and goes up Dulit to 1000 feet.

106. ANTHOTHREPTES RHODOLÆMA.

Anthreptes rhodolæma, Shelley; Everett, t. c. p. 137.

On Dulit at 2000 feet.

107. ARACHNOTHERA MODESTA.

Arachnothera modesta (Eyton); Everett, t. c. p. 137.

This Spider-hunter is found on Dulit at 2000 feet.

108. ARACHNOTHERA LONGIROSTRIS.

Arachnothera longirostris (V.); Everett, t. c. p. 137.

Found on Dulit at 3000 feet. Native name "Enkrasak."

109. ARACHNOTHERA JULIÆ.

Arachnothera juliæ, Sharpe, Ibis, 1887, p. 451, pl. xiv.

Found on Dulit at 5000 feet. It is very rare.

110. ARACHNORHAPHIS ROBUSTA.

Arachnorhaphis robusta (M. & S.); Everett, t. c. p. 138.

This Spider-hunter is a low-country bird, and occurs on Dulit up to 2000 feet.

111. ARACHNORHAPHIS CRASSIROSTRIS.

Arachnorhaphis crassirostris (Reichenb.); Everett, t. c. p. 138.

Also a low-country bird. Native name "Enkrasak."

112. ARACHNORHAPHIS FLAVIVENTRIS.

Arachnorhaphis flaviventris (Eyton); Everett, t. c. p. 138.

Arachnothera flaviventris, Gadow, Cat. B. ix. p. 109.

Found only in the low country.

Family DICÆIDÆ.

113. DICÆUM NIGRIMENTUM.

Dicæum nigrimentum, Salvad.; Everett, t. c. p. 139.

This is the ordinary little Flower-pecker of the low countries, and I have seen it on Dulit up to 1000 feet.

114. DICÆUM MONTICOLA.

Dicæum monticola, Sharpe; Everett, t. c. p. 139.

I procured only three specimens of this little bird on

Mt. Dulit at 5000 feet. These are one young male and two females, and of course without the fully adult male it is difficult to say whether the Dulit bird is identical with the Kina Balu species or not: at present the surmise is that they are the same, but further strict comparison is necessary.

115. Dicæum chrysorrhœum.

Dicæum chrysorrhœum, T.; Everett, t. c. p. 139.

Ascends Dulit to 1000 feet.

116. Prionochilus xanthopygius.

Prionochilus xanthopygius, Salvad.; Everett, t. c. p. 140.

Procured on Dulit at 4000 feet.

117. Prionochilus maculatus.

Prionochilus maculatus (T.); Everett, t. c. p. 140.

Also procured on Dulit at 4000 feet.

Family Zosteropidæ.

118. Zosterops squamifrons.

Zosterops squamifrons, Sharpe, Ibis, 1892, p. 323.

Found on Mount Dulit at a height of 3500 feet. Only one example was seen, and that was shot just outside my hut at the camp.

Family Ploceidæ.

119. Munia brunneiceps.

Munia brunneiceps, Wald.; Sharpe, Cat. B. xiii. p. 338; Everett, t. c. p. 142.

Very common throughout the low country.

120. Uroloncha fuscans.

Munia fuscans (Cass.); Everett, t. c. p. 142.

Uroloncha fuscans, Sharpe, Cat. B. xiii. p. 364.

The little Black Rice-bird is fairly common in the paddy-fields over the low country.

121. Uroloncha leucogastra.

Uroloncha leucogastra (Blyth); Sharpe, Cat. B. xiii. p. 362; Everett, t. c. p. 142.

The White-bellied Rice-bird is the rarest of our species. I have met with it only at Niah.

Family STURNIDÆ.

122. CALORNIS CHALYBEA.

Calornis chalybea (Horsf.); Sharpe, Cat. B. xiii. p. 143; Everett, t. c. p. 143.

This is the common Glossy Starling of the country, filling the Casuarina trees. In habits very like our common English bird. Native name "Empialing."

123. GRACULA JAVANENSIS.

Eulabes javanensis (Osbeck); Sharpe, Cat. B. xiii. p. 102; Everett, t. c. p. 144.

Gracula javanensis, Blyth (*cf.* Scl. Ibis, 1892, p. 102).

Common everywhere, in pairs. A good whistler and talker, and often trained by the Malays and Chinese. Native name "Tiong."

Family ARTAMIDÆ.

124. ARTAMUS LEUCOGASTER.

Artamus leucorhynchus (L.); Everett, t. c. p. 144.

Artamus leucogaster (Val.); Sharpe, Cat. B. xiii. p. 4.

This Wood-Swallow nests at a good height, generally about twenty-five or thirty feet from the ground, and the nest is placed on the summit of a stub, where the tree has been broken off. The habits of the bird are peculiar. It is fond of perching on the dead bough of a tree, whence it sails off with a swallow-like flight. It is essentially a bird of the clearings, and does not affect the jungle.

Family CORVIDÆ.

125. CORVUS TENUIROSTRIS.

Corvus tenuirostris, Moore; Everett, t. c. p. 145.

Native name "Burong Kak." These Crows are common all through the low country, but do not ascend the mountains to any great height.

126. DENDROCITTA CINERASCENS.

Dendrocitta cinerascens, Sharpe, Ibis, 1879, p. 250, pl. viii.; Everett, t. c. p. 147.

This pretty Magpie was one of the features of Mount Dulit between 3000 and 5000 feet, where its anvil-sounding note was heard everywhere. The bird could, notwithstanding, not be called plentiful.

127. CISSA JEFFERYI.

Cissa jefferyi, Sharpe, Ibis, 1888, p. 383; Everett, t. c. p. 146.

I found this Green Magpie on Mount Dulit at 5000 feet. It is very rare on the mountain.

128. PLATYSMURUS ATERRIMUS.

Platysmurus aterrimus (T.); Sharpe, Cat. B. iii. p. 91; Everett, t. c. p. 146.

Fairly common all over the low country, and ascends Mount Dulit up to 2000 feet. It has a very harsh 'Jay'-like note.

129. PLATYLOPHUS CORONATUS.

Platylophus coronatus (Raffl.); Sharpe, Cat. B. iii. p. 318; Everett, t. c. p. 147.

Known as the "Kajampang" or "the Rain-bird," from its unerring faculty of foretelling a storm. Whenever its whistle is heard, rain is always to be expected. The long crest-feathers are raised erect when the bird utters its note, accompanying the whistle with a jerky erection of the crest.

Family PITTIDÆ.

130. PITTA CYANOPTERA.

Pitta cyanoptera, T.; Scl. Cat. B. xiv. p. 420; Everett, t. c. p. 147.

Common all the year round in low country and on the mountains to about 1000 feet. Native name "Burong Pat."

131. PITTA GRANATINA.

Pitta granatina, T.; Scl. Cat. B. xiv. p. 430; Everett, t. c. p. 148.

This Pitta is common in the low country and ascends the mountain to about 2000 feet.

132. PITTA ARCUATA.

Pitta arcuata, Gould; Scl. Cat. B. xiii. p. 431; Everett, t. c. p. 148.

Occurs on Dulit from 2000 to 4000 feet, breeding on th mountain in September. I procured the young birds, whic are very different from the adults.

133. Pitta muelleri.

Pitta muelleri, Bp.; Scl. Cat. B. xiv. p. 439; Everett t. c. p. 149.

This is a low-country bird, and occurs at the foot of th mountain.

134. Pitta baudi.

Pitta baudi, Müll. & Schl.; Scl. Cat. B. xiv. p. 444; Everett t. c. p. 149.

This beautiful Pitta occurs in the low country and range up to 2000 feet on the mountain. It is an old-jungle bird preferring the forests, and not visiting clearings like *P granatina*. The female is very difficult to procure, bein probably concealed by its duller coloration.

135. Pitta schwaneri.

Pitta schwaneri, Bp.; Scl. Cat. B. xiv. p. 445; Everett t. c. p. 149.

Found only on the mountains, and occurs on Dulit fro 3000 to 4000 feet.

Family Eurylæmidæ.

136. Calyptomena viridis.

Calyptomena viridis, Raffl.; Scl. Cat. B. xiv. p. 456 Everett, t. c. p. 150.

This is the little Green Broadbill of the low country, bu it extends up the mountain to 3000 feet. Native nam "Pantap daun."

137. Calyptomena whiteheadi.

Calyptomena whiteheadi, Sharpe; Scl. Cat. B. xiv. p. 457 Everett, t. c. p. 150.

I was pleased to find this splendid bird on Mount Dulit where it occurs at 5000 feet.

138. Calyptomena hosii.

Calyptomena hosii, Sharpe, Ibis, 1892, p. 438, pl. x.

The first specimen of this bird was shot by one of my me in a ravine on Mount Dulit, at an elevation of 3000 feet. I was with him at the time, and we were attracted by the curious note, not unlike the subdued cooing of a Dove. It is a bird of the dark forests, and builds a hanging nest at the end of a bough, similar to that of *C. whiteheadi.*

139. PSARISOMUS PSITTACINUS.

Psarisomus psittacinus, S. Müll.; Everett, t. c. p. 150.

This pretty Broadbill occurs on Mount Dulit at 4000 feet. It must evidently nest there, as I procured four young birds together.

140. EURYLÆMUS OCHROMELAS.

Eurylæmus ochromelas (Raffl.); Scl. Cat. B. xiv. p. 465; Everett, t. c. p. 150.

A low-country Broadbill, ascending to 2000 feet on Dulit. Native name "Kong kong madi."

141. EURYLÆMUS JAVANICUS.

Eurylæmus javanicus, Horsf.; Scl. Cat. B. xiv. p. 463; Everett, t. c. p. 150.

This is also a low-country Broadbill, and extends up the slope of Dulit to about 1000 feet.

142. CYMBIRHYNCHUS MACRORHYNCHUS.

Cymbirhynchus macrorhynchus (Gm.); Scl. Cat. B. xiv. p. 468; Everett, t. c. p. 151.

Common along the banks of the rivers. It is fond of placing its nest over the water, suspending it from the upstanding boughs of some tree which has fallen in.

143. CORYDON SUMATRANUS.

Corydon sumatranus (Raffl.); Scl. Cat. B. xiv. p. 466; Everett, t. c. p. 151.

This large Broadbill is an inhabitant of the low country and ascends Dulit to about 2000 feet.

Family CYPSELIDÆ.

144. COLLOCALIA FUCIPHAGA.

Collocalia fuciphaga (Thunb.); Hartert, Cat. B. xvi. p. 498.

145. COLLOCALIA LOWI.

Collocalia lowi (Sharpe); Hartert, Cat. B. xvi. p. 498.

146. COLLOCALIA LINCHI.

Collocalia linchi, Horsf. & Moore; Hartert, Cat. B. xvi. p. 508.

All these three Swiftlets occur in the district, but I will defer my remarks on them to a future occasion.

147. CHÆTURA GIGANTEA.

Chætura gigantea (T.); Hartert, Cat. B. xvi. p. 475; Everett, t. c. p. 151.

This big Swift is found sitting on the top of dead trees and is very rare.

148. CHÆTURA LEUCOPYGIALIS.

Chætura leucopygialis (Blyth); Hartert, Cat. B. xvi. p. 490.

Chætura coracina, Scl.; Everett, t. c. p. 152.

Is found in the low country, frequenting the clearings.

149. MACROPTERYX LONGIPENNIS.

Macropteryx longipennis (Rafin.); Hartert, Cat. B. xvi. p. 514; Everett, t. c. p. 152.

This Crested Swift is only found in the low country, and I have not met with it on the mountain. It is very fond of sitting on the boughs of dead trees.

150. MACROPTERYX COMATUS.

Macropteryx comatus (Tick.); Hartert, Cat. B. xvi. p. 512; Everett, t. c. p. 152.

Generally seen on the banks of the rivers and ascends the mountain to about 1000 feet.

Family CAPRIMULGIDÆ.

151. CAPRIMULGUS MACRURUS.

Caprimulgus macrurus, Horsf.; Hartert, Cat. B. xvi. p. 537; Everett, t. c. p. 153.

This is the common Goatsucker of the low country, and occurs on the mountain up to 1000 feet.

152. CAPRIMULGUS CONCRETUS.

Caprimulgus concretus, Bp.; Hartert, Cat. B. xvi. p. 576; Everett, t. c. p. 153.

Found on the plains and cleared land of the low country. Has a monotonous note, "tok-tok-ta-thàr," which it keeps up all night long. It comes out about six in the evening, as the sun goes down.

Family PICIDÆ.

153. SASIA ABNORMIS.

Sasia abnormis (T.); Hargitt, Cat. B. xix. p. 557; Everett, t. c. p. 154.

This little Piculet occurs all through the low country, where it is fairly common; it ascends Dulit to 1000 feet.

154. CHRYSOCOLAPTES VALIDUS.

Chrysocolaptes validus (T.); Hargitt, Cat. B. xviii. p. 458.

Xylolepes validus, Everett, t. c. p. 154.

This is a low-country Woodpecker.

155. HEMICERCUS SORDIDUS.

Hemicercus sordidus (Eyton); Hargitt, Cat. B. xviii. p. 483; Everett, t. c. p. 155.

In the low country, reaching to the foot of Dulit. Native name "Entagris."

156. LEPOCESTES PORPHYROMELAS.

Lepocestes porphyromelas (Boie); Hargitt, Cat. B. xviii. p. 382; Everett, t. c. p. 155.

This is a low-country Woodpecker, which ascends Dulit to about 3000 feet. It is an "omen" bird, called by the natives "Kotok."

157. CHRYSOPHLEGMA MALACCENSE.

Chrysophlegma malaccense (Lath.); Hargitt, Cat. B. xviii. p. 126; Everett, t. c. p. 155.

Chrysophlegma humii, Hargitt; id. Cat. B. xviii. p. 126; Everett, t. c. p. 155.

A low-country species.

158. HEMILOPHUS PULVERULENTUS.

Hemilophus pulverulentus (T.); Hargitt, Cat. B. xviii. p. 494.

Muelleripicus pulverulentus, Everett, t. c. p. 156.

This large Woodpecker is found only in the low country, and is not at all common.

159. THRIPONAX JAVENSIS.

Thriponax javensis (Horsf.); Hargitt, Cat. B. xviii. p. 498; Everett, t. c. p. 157.

Native name "Blatok Tauong." A very noisy bird in the low country, and it ascends Dulit to about 2000 feet.

160. TIGA JAVANENSIS.

Tiga javanensis (Ljung.); Hargitt, Cat. B. xviii. p. 412; Everett, t. c. p. 157.

Only one specimen, obtained at Niah.

161. GAUROPICOIDES RAFFLESI.

Gauropicoides rafflesii (Vig.); Hargitt, Cat. B. xix. p. 132.

In the low country.

Family ALCEDINIDÆ.

162. ALCEDO BENGALENSIS.

Alcedo ispida, pt.; Sharpe, Cat. B. xvii. p. 143.

Alcedo bengalensis (Gm.); Everett, t. c. p. 158.

I found this Kingfisher at the mouth of the Baram River on several occasions.

163. ALCEDO ASIATICA.

Alcedo meninting, Horsf.; Sharpe, Cat. B. xvii. p. 157.

Alcedo asiatica, Sw.; Everett, t. c. p. 159.

This Kingfisher is distributed over the low country.

164. PELARGOPSIS LEUCOCEPHALA.

Pelargopsis leucocephala (Gm.); Sharpe, Cat. B. xvii. p. 98; Everett, t. c. p. 159.

Usually seen at the mouths of the rivers, frequenting the mangrove-swamps, and is occasionally found inland as far as 100 miles. Native name "Kaka Blengang."

165. CEYX EUERYTHRA.

Ceyx rufidorsa (nec Strickl.); Everett, t. c. p. 159.

Ceyx euerythra, Sharpe, Cat. B. xvii. p. 179.

This little Kingfisher is found in the low country.

166. CEYX DILLWYNNI.

Ceyx dillwynni, Sharpe; id. Cat. B. xvii. p. 177; Everett, t. c. p. 160.

Found on Dulit up to 1000 feet.

167. HALCYON COROMANDA.

Halcyon coromanda (Lath.); Sharpe, Cat. B. xvii. p. 217; Everett, t. c. p. 160.

Only two or three specimens have occurred to me in the low country.

168. HALCYON PILEATA.

Halcyon pileata (Bodd.); Sharpe, Cat. B. xvii. p. 229; Everett, t. c. p. 160.

This Kingfisher is pretty common along the banks of the rivers. Native name "Kaka."

169. HALCYON CONCRETA.

Halcyon concreta (T.); Sharpe, Cat. B. xvii. p. 285; Everett, t. c. p. 161.

This is a species found only in the old jungle, frequenting the dense forest and the watercourses high up at 4000 feet on Mount Dulit.

170. HALCYON CHLORIS.

Halcyon chloris (Bodd.); Sharpe, Cat. B. xvii. p. 273; Everett, t. c. p. 161.

The common low-country species, frequenting gardens and cleared land by the sides of rivers.

171. CARCINEUTES MELANOPS.

Carcineutes melanops (Bp.); Sharpe, Cat. B. xvii. p. 200; Everett, t. c. p. 161.

This is a low-country bird, but ascends Dulit to 2000 feet. It is an "omen" bird. Native name "Membuas."

Family BUCEROTIDÆ.

172. BUCEROS RHINOCEROS.

Buceros rhinoceros, L.; Grant, Cat. B. xvii. p. 352; Everett, t. c. p. 162.

Fairly common in the low country, but is also fond of frequenting hills, ascending Dulit, for instance, to 3000 feet. Native name "Kenegalang."

173. RHINOPLAX VIGIL.

Rhinoplax vigil (Forst.); Grant, Cat. B. xvii. p. 427; Everett, t. c. p. 162.

Met with on the mountains, up to 3000 feet on Dulit. Native name "Tajak." The long tail-feathers are worn by the Kayan chiefs in their war-caps and are of considerable value.

174. AHTHRACOCEROS CONVEXUS.

Anthrococeros convexus (T.); Grant, Cat. B. xvii. p. 364; Everett, t. c. p. 162.

A low-country bird, which I believe does not ascend the mountains. Native name "Burong Bulu."

175. ANTHRACOCEROS MALABARICUS.

Anthracoceros malabaricus (Gm.); Grant, Cat. B. xvii. p. 365; Everett, t. c. p. 162.

A low-country species. This bird is called "Bowin" (a pig), because it makes a noise exactly like a pig squealing.

176. CRANORRHINUS CORRUGATUS.

Cranorrhinus corrugatus (T.); Grant, Cat. B. xvii. p. 379; Everett, t. c. p. 163.

Very rare low-country Hornbill.

177. RHYTIDOCEROS UNDULATUS.

Rhytidoceros undulatus (Shaw); Grant, Cat. B. xvii. p. 382; Everett, t. c. p. 163.

This chestnut-headed Hornbill is found on Dulit up to 4000 feet; it also occurs in the low country, but is rare. Native name "Kuku-kua."

178. Rhytidoceros subruficollis.

Rhytidoceros subruficollis (Blyth); Grant, Cat. B. xvii. p. 384; Everett, t. c. p. 163.

This species also occurs on Dulit at 3000 feet.

179. Anorrhinus galeritus.

Anorrhinus galeritus (T.); Grant, Cat. B. xvii. p. 391; Everett, t. c. p. 163.

A common low-country species. Native name "Tekallau."

180. Berenicornis comatus.

Anorrhinus comatus (Raffl.); Everett, t. c. p. 165.

Berenicornis comatus, Grant, Cat. B. xvii. p. 423

The White-crested Hornbill is a very important "omen" bird among the Kayans.

Family Meropidæ.

181. Nyctiornis amicta.

Nyctiornis amicta (T.); Sharpe, Cat. B. xvii. p. 90; Everett, t. c. p. 164.

This beautiful Bee-eater is a low-country bird, but is found on Dulit up to 1000 feet.

182. Merops sumatranus.

Merops sumatranus (Raffl.); Sharpe, Cat. B. xvii. p. 61; Everett, t. c. p. 164.

This Bee-eater is usually found on the coast, occasionally occurring along the banks of the rivers.

Family Coraciidæ.

183. Eurystomus orientalis.

Eurystomus orientalis (L.); Sharpe, Cat. B. xvii. p. 33, pl. 2. fig. 1; Everett, t. c. p. 165.

This Roller is found only in the low country in the neighbourhood of clearings. Native name "Tiong Manang."

Family Trogonidæ.

184. Harpactes whiteheadi.

Harpactes whiteheadi, Sharpe; Grant, Cat. B. xvii. p. 488; Everett, t. c. p. 166.

Found on Mount Dulit at 5000 feet.

185. Harpactes diardi.

Harpactes diardi (T.); Grant, Cat. B. xvii. p. 482; Everett, t. c. p. 166.

A low-country Trogon, found on Dulit up to 5000 feet.

186. Harpactes kasumba.

Harpactes kasumba (Raffl.); Grant, Cat. B. xvii. p. 483; Everett, t. c. p. 166.

This Trogon occurs throughout the low country, and also on Mount Dulit up to about 2000 feet. Native name "Papaw."

187. Harpactes duvauceli.

Harpactes duvauceli (T.); Grant, Cat. B. xvii. p. 491; Everett, t. c. p. 166.

Found all through the low country, and on Mount Dulit to 3000 feet. Native name "Baragai."

188. Harpactes dulitensis.

Harpactes dulitensis, Grant, Cat. B. xvii. p. 502, pl. xvii.

This beautiful yellow Trogon was obtained on Mount Dulit at 5000 feet.

188 *a*. Harpactes vidua.

Harpactes vidua, Grant, Cat. B. xvii. p. 501.

Only a single female specimen obtained.

Family Podargidæ.

189. Batrachostomus affinis.

Batrachostomus affinis, Blyth; Hartert, Cat. B. xvi. p. 643.

Of this bird I got only a single specimen on Mount Dulit at about 2000 feet.

190. Batrachostomus harterti.

Batrachostomus harterti, Sharpe, Ibis, 1892, p. 323; Hartert, Cat. B. xvi. p. 638.

Discovered at the foot of Mount Dulit at about 1000 feet. The specimen was captured in a small jungle-hut, into which it had flown in the dusk, evidently attracted by the light.

191. BATRACHOSTOMUS MIXTUS.

Batrachostomus mixtus, Sharpe, Bull. B. O. C. no. ii. p. iv; Ibis, 1893, p. 117.

Found on Dulit at 5000 feet.

Family CAPITONIDÆ.

192. CHOTORHEA CHRYSOPSIS.

Chotorhea chrysopsis (Goffin); Shelley, Cat. B. xix. p. 59.

Megalæma chrysopsis, Everett, t. c. p. 167.

This yellow-eared Barbet was procured on Mount Dulit at 3000 feet, where it was fairly common. Native name "Tegok."

193. CHOTORHEA VERSICOLOR.

Chotorhea versicolor (Raffl.); Shelley, Cat. B. xix. p. 59.

Megalæma versicolor, Everett, t. c. p. 167.

Common all through the low country and ascending Mount Dulit to 2000 feet.

194. CYANOPS HENRICII.

Cyanops henricii (T.); Shelley, Cat. B. xix. p. 67.

Megalæma henricii, Everett, t. c. p. 168.

Found in the low country, but rare; one specimen was obtained on Mount Dulit at 2000 feet.

195. CYANOPS MYSTACOPHANES.

Cyanops mystacophanes (T.); Shelley, Cat. B. xix. p. 72.

Megalæma mystacophanos, Everett, t. c. p. 167.

This pretty little Barbet is found all through the low country, and on Mount Dulit up to 2000 feet.

196. CYANOPS MONTICOLA.

Cyanops monticola, Sharpe; Shelley, Cat. B. xix. p. 74; Everett, t. c. p. 168.

Found on Dulit at 4000 feet, where it is very common.

197. MESOBUCCO DUVAUCELI.

Mesobucco duvauceli (Less.); Shelley, Cat. B. xix. p. 85.

Xantholæma duvauceli, Everett, t. c. p. 168.

A common little low-country bird, found on Dulit up to 2000 feet. Native name "Kara."

198. MESOBUCCO EXIMIUS.

Mesobucco eximius, Sharpe, Ibis, 1892, p. 324, 1893, pl. xi.

Found on Mount Dulit at 4000 feet, and also on Mount Batu Song at the same elevation.

199. CALORHAMPHUS FULIGINOSUS.

Calorhamphus fuliginosus (Temm.); Shelley, Cat. B. xix. p. 51; Everett, t. c. p. 168.

A low-country species, also occurring on Dulit up to 2000 feet.

Family INDICATORIDÆ.

200. INDICATOR ARCHIPELAGICUS.

Indicator archipelagicus, T.; Shelley, Cat. B. xix. p. 4; Everett, t. c. p. 169.

The Honey-Guide is a very rare bird indeed. I have met with a specimen only on one occasion in the low country.

Family CUCULIDÆ.

201. CUCULUS CANORUS.

Cuculus canorus, L.; Shelley, Cat. B. xix. p. 245.

Cuculus canorinus, Everett, t. c. p. 169.

A Cuckoo, which I believe to be the same as the English bird, occurs on migration on the coast.

202. CUCULUS SONNERATI.

Cuculus sonnerati, Lath.; Shelley, Cat. B. xix. p. 262; Everett, t. c. p. 170.

A low-country bird.

203. HIEROCOCCYX NANUS.

Hierococcyx nanus, Hume; Shelley, Cat. B. xix. p. 238; Everett, t. c. p. 171.

Occurs at Baram. (*Cf.* Everett, l. c.)

204. CACOMANTIS MERULINUS.

Cacomantis merulinus (Scop.); Shelley, Cat. B. xix. p. 268; Everett, t. c. p. 172.

A low-country species.

205. SURNICULUS LUGUBRIS.

Surniculus lugubris (Horsf.); Shelley, Cat. B. xix. p. 227; Everett, t. c. p. 172.

A low-country Cuckoo, occurring on Dulit to 2000 feet.

206. CHALCOCOCCYX XANTHORHYNCHUS.

Chalcococcyx xanthorhynchus, Shelley, Cat. B. xix. p. 289.

Found on Dulit at 4000 feet, but it is rare there.

207. COCCYSTES COROMANDUS.

Coccystes coromandus (L.); Shelley, Cat. B. xix. p. 214; Everett, t. c. p. 173.

Occurs on the coast on migration. Native name "Enteracup."

208. RHINORTHA CHLOROPHÆA.

Rhinortha chlorophæa (Raffl.); Shelley, Cat. B. xix. p. 393; Everett, t. c. p. 173.

This small brown Cuckoo is common in the low country.

209. RHOPODYTES DIARDI.

Rhopodytes diardi (Less.); Shelley, Cat. B. xix. p. 390; Everett, t. c. p. 174.

A low-country species.

210. UROCOCCYX ERYTHROGNATHUS.

Urococcyx erythrognathus (Hartl.); Shelley, Cat. B. xix. p. 398.

Rhamphococcyx erythrognathus, Everett, t. c. p. 174.

Found all over the low country, and on Dulit to 2000 feet.

211. ZANCLOSTOMUS JAVANICUS.

Zanclostomus javanicus (Horsf.); Shelley, Cat. B. xix. p. 380; Everett, t. c. p. 175.

All over the low country, and on Dulit to 3000 feet. Native name "Mindoo jugum."

212. CARPOCOCCYX RADIATUS.

Carpococcyx radiatus (T.); Shelley, Cat. B. xix. p. 415; Everett, t. c. p. 175.

A very rare bird, only found on the ground. Native name "Kruai Manang."

213. CENTROCOCCYX EURYCERCUS.

Centrococcyx eurycercus (Hay); Everett, t. c. p. 175.
Centropus sinensis (Steph.); Shelley, Cat. B. xix. p. 343.

214. CENTROCOCCYX JAVANENSIS.

Both these species of *Centrococcyx* are found all over the low country, and on the mountains to 2000 feet.

Family PSITTACIDÆ.

215. PALÆORNIS LONGICAUDA.

Palæornis longicauda (Bodd.); Salvad. Cat. B. xx. p. 475; Everett, t. c. p. 177.

This is the common Parrot of the district. It nests in my garden at Claudetown, the birds selecting a hole in a big tree about 60 feet from the ground. Native name "Bayan."

216. PSITTINUS INCERTUS.

Psittinus incertus (Shaw); Salvad. Cat. B. xx. p. 501; Everett, t. c. p. 177.

Rather rare with us, and found only in the low country. Native name "Bayan Kadiman."

217. LORICULUS GALGULUS.

Loriculus galgulus (L.); Salvad. Cat. B. xx. p. 531; Everett, t. c. p. 177.

This little Lorikeet is found on all cleared land, and ascends Mount Dulit to 2000 feet. It is caught by the natives in large numbers. Native name "Entalit."

Family BUBONIDÆ.

218. KETUPA JAVANENSIS.

Ketupa javanensis, Less.; Sharpe, Cat. B. ii. p. 8; Everett, t. c. p. 177.

Rare in Baram.

219. BUBO ORIENTALIS.

Bubo orientalis (Horsf.); Sharpe, Cat. B. ii. p. 39, Everett, t. c. p. 178.

Found on Dulit at 3000 feet.

220. SCOPS LEMPIJI.

Scops lempiji (Horsf.); Sharpe, Cat. B. ii. p. 91; Everett, t. c. p. 178.

This is the ordinary Eared Owlet of the low country.

221. SCOPS BROOKII. (Plate XI.)

Scops brookii, Sharpe, Bull. B. O. C. ii. p. iv; Ibis, 1893, p. 117.

Found on Mount Dulit at 5000 feet. It must be very rare, as only one specimen was seen.

I need not give a detailed description of this new species of *Scops*, for the characters by which it is distinguished are very easily stated. It belongs to the group of *S. magicus*, so far as appearance goes, and is wonderfully like *S. bouruensis*, Sharpe (Cat. B. ii. p. 73), in the colour of the under surface; but on the upper surface it is quite different, being much more rufous, more coarsely mottled with black, and it differs from *S. bouruensis* and all its allies in having the triple band on the head and hind neck *white* instead of *ochraceous*, the pattern being the usual one of the group, viz., a white occipital spot; a second, larger one, on the nape; and a third on the hind neck, forming a broad cervical collar. The broad band on the side of the crown, extending to the ear-tufts, is also white. Another peculiarity of the species is in the tibial joint, which has a large patch of chestnut barred with black.

I may add that I have compared the specimen of this Owl with examples of *Scops everetti*, which is the nearest species in geographical position to which it could be allied, and that there is no connection between them.

222. HETEROSCOPS LUCIÆ.

Heteroscops luciæ, Sharpe, Ibis, 1879, p. 77, pl. iii.; Everett, t. c. p. 178.

Found on Dulit at 4000 to 5000 feet.

223. PHOTODILUS BADIUS.

Phodilus badius (Horsf.); Sharpe, Cat. B. ii. p. 309; Everett, t. c. p. 178.

The Bay Owl is found in the low country. It frequently enters houses at night, where it is captured by the natives. Native name "Burong Pok." In its mode of life this species is very like a small Barn Owl.

224. NINOX SCUTULATA.

Ninox scutulata (Raffl.); Sharpe, Cat. B. ii. p. 156; Everett, t. c. p. 179.

This Hawk-Owl makes a melancholy cry at night, on account of which it is very much disliked by the natives as a foreteller of death. Native name "Pongok."

225. SYRNIUM LEPTOGRAMMICUM.

Syrnium leptogrammicum (T.); Sharpe, Cat. B. ii. p. 264; Everett, t. c. p. 179.

This Wood-Owl occurs on Dulit at about 2000 feet.

Family FALCONIDÆ.

226. ASTUR TRIVIRGATUS.

Astur trivirgatus (T.); Sharpe, Cat. B. i. p. 105; Everett, t. c. p. 180.

Found only in low countries, as far as I know.

227. ACCIPITER RUFOTIBIALIS.

Accipiter rufotibialis, Sharpe, Ibis, 1887, p. 437, 1889, p. 68, pl. ii.

This little Sparrow-Hawk was shot on Mount Dulit at 4000 feet.

228. ACCIPITER VIRGATUS.

Accipiter virgatus (T.); Sharpe, Cat. B. i. p. 150; Everett, t. c. p. 180.

I procured this species on the Bakong River in the Baram district.

229. SPIZAËTUS ALBONIGER.

Spizaëtus alboniger (Blyth); Sharpe, Cat. B. i. p. 271; Everett, t. c. p. 181.

This small Crested Eagle is found in the low country and on Dulit to 1000 feet.

230. SPIZAËTUS LIMNAËTUS.

Spizaëtus limnaëtus (Horsf.); Sharpe, Cat. B. i. p. 272; Everett, t. c. p. 181.

This large Black Eagle plays havoc with the fowls, and is found everywhere, ranging on Dulit to 3000 feet.

231. LOPHOTRIORCHIS KIENERI.

Lophotriorchis kieneri (Geoffr.); Sharpe, Cat. B. i. p. 255; Everett, t. c. p. 182.

A very rare bird with us. Only one specimen has been obtained by me at Claudetown.

232. SPILORNIS PALLIDUS.

Spilornis pallidus, Wald.; Sharpe, Cat. B. i. p. 290; Everett, t. c. p. 182.

This little Serpent-Eagle is found usually along the banks of the rivers, perched on stumps of dead trees. Native name "Zangburik."

233. BUTASTUR INDICUS.

Butastur indicus (Gm.); Sharpe, Cat. B. i. p. 297; Everett, t. c. p. 183.

One specimen shot at Baram mouth.

234. HALIAËTUS LEUCOGASTER.

Haliaëtus leucogaster (Gm.); Sharpe, Cat. B. i. p. 307; Everett, t. c. p. 183.

This large Sea-Eagle is fairly common and nests on the coast. It makes a big nest on the top of a dead tree.

235. HALIASTUR INTERMEDIUS.

Haliastur intermedius, Gurney; Sharpe, Cat. B. i. p. 314; Everett, t. c. p. 183.

Found everywhere all over the low country whenever the natives are burning for their farms. Native name "Singalang Burong."

236. MACHÆRIRHAMPHUS ALCINUS.

Machærhamphus alcinus, Westerm.; Sharpe, Cat. B. i. p. 342; Everett, t. c. p. 184.

Found in the low country, frequenting the Bat-caves. It feeds on the Bats, and is by far the quickest-flying Hawk that we have. Native name "Rajah Wali."

237. MICROHIERAX FRINGILLARIUS.

Microhierax fringillarius (Drap.); Sharpe, Cat. B. i. p. 367; Everett, t. c. p. 185.

This little Hawk is found throughout the low country. It frequents very high dead trees.

Family PLOTIDÆ.

238. PLOTUS MELANOGASTER.

Plotus melanogaster (Penn.); Salvad. Ucc. Born. p. 367; Everett, t. c. p. 188.

I found the Darters nesting in rookeries in Loagantujoh, where numbers of white-coated young were sitting in the nests; the latter were placed on the trees surrounding the lake at a height of about 30 feet.

Family ARDEIDÆ.

239. ARDEA SUMATRANA.

Ardea sumatrana, Raffl.; Salvad. Ucc. Born. p. 344; Everett, t. c. p. 188.

Found along the coast and in the mouths of rivers. Native name "Burong raia."

240. ARDEA PURPUREA.

Ardea purpurea, L.; Salvad. Ucc. Born. p. 345; Everett, t. c. p. 188.

The "Kuju" is found along the banks of the rivers, and extends quite a hundred miles inland.

241. NYCTICORAX GRISEUS.

Nycticorax griseus (L.); Salvad. Ucc. Born. p. 356; Everett, t. c. p. 190.

The Night Heron nests with us on Lake Ansok.

Family COLUMBIDÆ.

242. TURTUR TIGRINUS.

Turtur tigrina (T.); Everett, t. c. p. 193.

Spilopelia tigrina, Salvad. Ucc. Born. p. 296.

This is a common Turtle Dove, found on all the native farms and clearings. Native name "Tekukor."

243. MACROPYGIA RUFICEPS.

Macropygia ruficeps (T.); Salvad. Ucc. Born. p. 298; Everett, t. c. p. 193.

Occurs on Mount Dulit from 2000 to 4000 feet.

244. CHALCOPHAPS INDICA.

Chalcophaps indica (L.); Salvad. Ucc. Born. p. 299; Everett, t. c. p. 194.

This little Ground Pigeon is common all through the low country and is found on Dulit up to 3000 feet. Native name "Embok."

245. CARPOPHAGA ÆNEA.

Carpophaga ænea (L.); Salvad. Ucc. Born. p. 290; Everett, t. c. p. 194.

The common Fruit-Pigeon of the country, ascending Dulit to 2000 feet. Native name "Pergum."

246. CARPOPHAGA BADIA.

Carpophaga badia (Raffl.); Salvad. Ucc. Born. p. 291; Everett, t. c. p. 195.

This species occurs on Dulit at 5000 feet. It is also found in the low country.

247. TRERON NASICA.

Treron nasica, Schl.; Salvad. Ucc. Born. p. 283; Everett, t. c. p. 196.

Native name "Punai."

248. TRERON VERNANS.

Treron vernans (L.); Salvad. Ucc. Born. p. 286; Everett, t. c. p. 196.

249. TRERON OLAX.

Treron olax (T.); Salvad. Ucc. Born. p. 289; Everett, t. c. p. 196.

250. TRERON BARAMENSIS.

T. fulvicollis baramensis, Meyer, J. f. O. 1891, p. 73.

All these Pigeons occur in the low country, the only one ascending Dulit to any great height being *T. olax,* which was found at 4000 feet.

251. TRERON CAPELLEI.

Treron capellei (T.); Salvad. Ucc. Born. p. 285; Everett, t. c. p. 196.

Only in the low country.

252. PTILOPUS JAMBU.

Ptilopus jambu (Gm.); Everett, t. c. p. 197.

Ptilonopus jambu, Salvad. Ucc. Born. p. 289.

A low-country species, but found on Mount Dulit at 5000 feet.

Family PHASIANIDÆ.

253. ARGUSIANUS GRAYI.

Argusianus grayi, Elliot; Salvad. Ucc. Born. p. 305; Everett, t. c. p. 197.

Found on Mount Dulit up to 2000 feet and on the hills in the low country.

254. LOBIOPHASIS BULWERI.

Lobiophasis bulweri, Sharpe; Everett, t. c. p. 198.

Bulwer's Pheasant is only found on the mountains, though it does not ascend very high, not extending beyond 2000 feet as far as I know. The actions of this bird are entirely Fowl-like, and it is much more like a Jungle-fowl in its ways than a Pheasant. The picture in the 'Birds of Asia' gives a wrong idea of the carriage of the bird, and I very much doubt whether it ever sits up in the way there depicted. On the contrary, it skulks along through the jungle, carrying its tail in a curve like a fowl. It is often trapped by the natives and is essentially a ground-bird, seldom taking flight, but preferring to run through the jungle to save itself. I believe that it takes quite three years before the full white tail is assumed. Native name "Bagier."

255. EUPLOCAMUS IGNITUS, Shaw.

Euplocamus nobilis, Scl.; Everett, t. c. p. 199.

This Fireback is a bird of the low country. Native name "Sempidan."

256. EUPLOCAMUS PYRONOTUS.

Euplocamus pyronotus (Gray); Everett, t. c. p. 199.

This Pheasant is a low-country bird, but is decidedly rare. Native name "Singgier."

257. MELANOPERDIX NIGRA.

Melanoperdix niger (Vig.); Everett, t. c. p. 199.

Not a common bird with us. Found in the low country, but does not ascend the mountain. Native name "Pipit hantu." I have found three nests, each containing five eggs.

258. ROLLULUS ROULROUL.

Rollulus roulroul (Scop.); Everett, t. c. p. 200.

Common everywhere, going in coveys. Native name "Sengayan."

259. CALOPERDIX BORNEENSIS.

Caloperdix borneensis, Ogilvie Grant, Bull. B. O. C. ii. p. v; Ibis, 1893, p. 117.

I found this new species on Mount Dulit at a height of 5000 feet in the moss. Only one specimen was obtained.

260. HÆMATORTYX SANGUINICEPS.

Hæmatortyx sanguiniceps, Sharpe; Everett, t. c. p. 200.

Found in the same locality as the former, and under the same conditions.

261. EXCALFACTORIA CHINENSIS.

Excalfactoria chinensis (L.); Everett, t. c. p. 200.

Only in the low country in the grass and low scrub. Native name "Empitu."

Family RALLIDÆ.

262. ERYTHRA PHŒNICURA.

Erythra phœnicura (Penn.); Everett, t. c. p. 202.

A low-country bird, frequenting the sides of rivers and marshes. Native name "Kruak."

Family GLAREOLIDÆ.

263. GLAREOLA ORIENTALIS.

Glareola orientalis, Leach; Everett, t. c. p. 204.

This Pratincole occurs during the N.E. monsoon in considerable numbers all over the low country, and is often found sixty miles inland, not frequenting merely the rivers, but even the interior parts, such as the clearings.

Family CHARADRIIDÆ.

264. ŒDICNEMUS MAGNIROSTRIS.

Œdicnemus magnirostris, Geoffr.; Everett, t. c. p. 203.

Found on the coast at Baram mouth during the N.E. monsoon.

265. CHARADRIUS FULVUS.

Charadrius fulvus (Gm.); Everett, t. c. p. 204.

The Golden Plover comes in the monsoon. It spends the winter with us, and changes to summer plumage before it leaves.

266. SQUATAROLA HELVETICA.

Squatarola helvetica (L.); Everett, t. c. p. 204.

The Grey Plover also spends the winter with us.

XXXIX.—*On the Birds of Hainan.* By F. W. STYAN, F.Z.S., M.B.O.U.

(Plate XII.)

THE island of Hainan lies opposite the extreme southern point of the mainland of China, from which it is separated by a channel only a few miles in breadth. It is about 150 miles long and 50 broad, and is well within the tropics, the 20th parallel passing through its northern extremity. The coast-line is flat, but mountains rise in the interior, forming a high mass in the south-west, from which extend ranges in every direction; one long straight ridge runs north-east through almost the whole length of the island. A considerable part of this mountainous region is inhabited by the Les, an independent aboriginal tribe, who appear to be friendly enough to strangers, but to have little liking for the Chinese, with whom they trade in a small way, but to whom they acknowledge no allegiance.

The island has hardly been explored beyond the coast-line, and but for Swinhoe's researches (see Ibis, 1870, pp. 77, 230, 342) next to nothing would be known of its fauna. When Consul at Kiungchow Swinhoe worked with his well-known activity, and through his native collectors obtained examples of a large number of the birds inhabiting the island, among which were an astonishing number of novelties. An interesting account of a trip through a great part of the interior, embracing much of the country of the aboriginals, will be found in a book published in 1886, 'Ling-Nam, or Interior Views of Southern China,' by B. C. Henry.

Since the days of Swinhoe's discoveries, I believe I am right in saying that no one has visited the island with a view of studying its avifauna; and the collections made by Mr. B. Schmacker through his Japanese hunter Tetsu are therefore of great interest. Tetsu has paid two visits to the island, and the results of the first were examined and reported on by Dr. G. Hartlaub *. These, I believe, were mainly collected near Hoihow on the northern coast. The second collection, the result of two trips to the mountainous regions of the south-west, made between May 1891 and January 1892, was kindly put into my hands by Mr. Schmacker.

In the 'Bulletin of the British Ornithologists' Club' for November 1892, I described as apparently new five species, but with regard to some of these I regret to say I was mistaken. The others and several of doubtful identity I sent to Dr. Bowdler Sharpe to examine, and his report on these birds will be found in the 'Bulletin of the British Ornithologists' Club' † for December 1892.

The total number of species of which examples were obtained by Mr. Schmacker's collector was about 40—a good result, considering that little attention was paid to sea-birds or waterfowl, and that the real object of his visits was Conchology. This raises the total number of Hainan species to 159.

Of these 159 species, 17 are, so far as is known, confined to Hainan—an astonishingly large number, seeing

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* "Ein Beitrag zur Ornithologie Chinas," Abhandlungen des naturwissenschaftlichen Vereins zu Bremen, 1892.

† Bull. B. O. C. no. iv. p. xix.

that the distance from the mainland is so little, that to all intents and purposes the island is no more than a peninsula, and there could be no difficulty in birds of very weak flight crossing over the strait. These 17 peculiar species are :—

Dryonastes monachus.
Pomatorhinus nigrostellatus.
Graminicola striata.
Pycnonotus hanianus.
Hemixus castanonotus.
Hypsipetes perniger.
Chloropsis lazulina.
Psaropholus nigellicauda.
Campophaga saturata.
Æthopyga christinæ.
Cinnyris rhizophoræ.
Temnurus schmackeri.
Micropternus holroydi.
Cyanops faber.
Osmotreron domvilii.
Macropygia swinhoei.
Arboricola ardens.

Possibly, when more is known of the birds of Tongkin and Yunnan, some of these species may be found to inhabi the mainland.

Eight other species appear not to have been previousl met with in China, viz.:—

Garrulax moniliger,
Siphia pallidipes,
Rhipidura albicollis,
Lepocestes pyrrhotis,
Merops sumatranus,
Harpactes erythrocephalus,
Treron nipalensis,
Alsocomus puniceus,

and not improbably some of these may be found to diffe from the typical forms.

The general facies of the avifauna of Hainan is tropical being allied in many ways to that of the Malay Peninsula and, through Cochin China and Burmah, to that of India several species, not found on the mainland of China, connect it with Formosa.

In the appended list the species in brackets are thos which were identified by Dr. Hartlaub, but are not represented in the later collections.

As regards localities mentioned, Hoihow is the main port of the island, on the northern coast opposite the mainland the Hummocks are volcanic peaks not far from Hoihow Nodoaha No Tai and Nam Fung are in the interior, in a valley opening northwards from the great central highlands Ting On, Lauwowan, and Leimumon (Leimoi) are on the north of the long range running N.E., Ting On being on the river which runs down to Hoihow, and the other two places are apparently small villages on the northern slope of the range.

1. MERULA CARDIS (Temm.).
2. [MERULA MANDARINA, Bp.]
3. MONTICOLA SOLITARIUS (P. L. S. Müll.).
4. [MONTICOLA CYANUS (L.).]
5. COPSYCHUS SAULARIS (L.).

6. CITTACINCLA TRICOLOR (Vieill.).

♂ ♀, Nodouba, May.

These specimens belong to the Javan race, with black bases to the outer rectrices. The female resembles the male, but has a much shorter tail, and is paler on the belly and under tail-coverts; the primaries are edged with brown.

7. GARRULAX MONILIGER (Hodgson).

♂, one specimen from Liuwowan. Neither Swinhoe nor David records this species; a near ally, *G. pectoralis*, is found on the mainland.

8. DRYONASTES MONACHUS (Swinhoe).

Peculiar to Hainan. Several specimens.

9. TROCHALOPTERUM CANORUM (L.).

10. POMATORHINUS NIGRO-STELLATUS, Swinhoe.

This species, which is peculiar to Hainan, belongs to the same group as *P. ruficollis*, *P. stridulus*, *P. styani*, and *P. musicus*. In the specimen procured the centres of all the feathers on the fore neck and throat are chestnut, bordered with blackish and edged with white.

11. BURNESIA SONITANS (Swinhoe).
12. PRINIA INORNATA, Sykes.
13. [SUTORIA SUTORIA (Forster).]

14. GRAMINICOLA STRIATA, Styan, Bull. B. O. C. ii. p. vi; Ibis, 1893, p. 54.

The two typical specimens were obtained at Leimumon or Leimoi.

15. [CISTICOLA CISTICOLA (Temm.).]
16. PRATINCOLA MAURA (Pall.).
17. [RUTICILLA RUFIVENTRIS, Jerd.]
18. ERITHACUS CALLIOPE (Pall.).
19. [ERITHACUS SIBILANS (Swinhoe).]
20. [PHYLLOSCOPUS SUPERCILIOSUS (Gm.).]
21. [LUSCINIOLA FUSCATA (Blyth).]
22. MOTACILLA LEUCOPSIS, Gould.
23. MOTACILLA MELANOPE, Pall.
24. ANTHUS RICHARDI, Vieill.
25. ANTHUS CERVINUS (Pall.).
26. [ANTHUS MACULATUS (Hodgson).]
27. ALCIPPE MORRISONIA, Swinhoe.

A single specimen with ashy grey head. I cannot distinguish between the Formosan and Chinese continental forms of this species.

28. HERPORNIS TYRANNULUS, Swinhoe.

Cryptolopha bicolor, Styan, Bull. B. O. C. ii. p. vi (1892); Ibis, 1893, p. 55.

Herpornis tyrannulus, Sharpe, Bull. B. O. C. iv. p. xix.

I have lately met with a description of this bird, and have no doubt that my supposed *Cryptolopha* is nothing but this species.

29. PYCNONOTUS HAINANUS, Swinhoe.

A single specimen. This species is peculiar to Hainan.

30. HEMIXUS CASTANONOTUS, Swinhoe.

The figure in P. Z. S. (1890, p. 346, pl. xxvii.) is misleading, the type from which it was taken having been either abraded or dirty. In perfect specimens the underparts are quite as pure as in *H. canipennis*; the breast in both species is suffused with a wash of bluish grey; but in only one specimen—an abraded one—is there any trace of smoky brown on the underparts, and then it is confined to the breast. In good skins the basal half of the rectrices is externally edged with yellow; in the male the chestnut back is deeper coloured than in the female. This species is peculiar to Hainan.

31. [SPIZIXUS CINEREICAPILLUS, Swinhoe.]

32. Hypsipetes perniger, Swinhoe.

Peculiar to Hainan. Several specimens from the Hummocks.

33. Criniger pallidus, Swinhoe.

Pinarocichla schmackeri, Styan, Bull. B. O. C. ii. p. vi (1892); Ibis, 1893, p. 54.

Criniger pallidus, Sharpe, Bull. B. O. C. iv. p. xix.

Specimens from Nodouha in May, and from Liuwowan in December.

34. Chloropsis lazulina, Swinhoe.

Peculiar to Hainan. Specimens from Nodouha and Leimumon.

35. Oriolus diffusus, Sharpe.
36. [Psaropholus nigellicauda, Swinhoe.]
37. Buchanga leucogenys, Walden.
38. Buchanga atra (Hermann).
39. [Buchanga cineracea (Horsf.).]

40. Tephrodornis pelvicus (Hodgson).

Nodouha in May; Liuwowan in December.

41. Campophaga saturata, Swinhoe.

One ♀ from Leimumon. Peculiar to Hainan.

42. Graucalus macii, Lesson.

43. Pericrocotus elegans, M'Clell.

In a series of 13 males, 5 have red on the central tail-feathers, 8 have none. This would point to their being *P. speciosus*; it is, however, a very uncertain and unsatisfactory mark of distinction, for specimens shot at the same time and locality differ *inter se*. I prefer, therefore, to judge these by wing-measurements, which are 3·6 in. to 3·8 in. It seems, however, very doubtful whether the two species are really distinct.

44. Lanius fuscatus, Lesson.

A single abraded female. Nodouha, 15th May.

45. Lanius superciliosus, Latham.
46. [Lanius schach, L.]

47. HYPOTHYMIS OCCIPITALIS (Vigors).

Lower parts washed with purplish grey, but only lightly; doubtfully distinct from *H. azurea*.

48. [NILTAVA CYANOMELÆNA (Temm.).]

49. SIPHIA PALLIDIPES (Jerdon)?

Three specimens from Leimumon (Dec. and Jan.) and Nodouha (May). These belong either to this species or to one closely allied to it; they appear to be much smaller than the Indian bird.

	Length. in.	Wing. in.	Tail. in.
Indian	5·7	2·9	2·5
Hainan .	5·3	2·55/2·65	2·5

The sides of the breast are deep blue like the throat and chest, but the centre of the breast is mottled with white tips to the feathers; below that the feathers are mottled grey and white, flanks washed with grey, only the abdomen and under tail-coverts pure white. In two specimens the underparts and under wing-coverts are partly washed with pale orange-buff, which seems due to immaturity. As the Indian bird has not been met with in Burmah, it was not unlikely that this would have proved to be a new species, but Dr. Sharpe tells me that he cannot distinguish it.

50. TERPSIPHONE PRINCEPS (Temm.).

Hoihow, 10th October, a single male.

51. MUSCICAPA ALBICILLA, Pall.

52. ALSEONAX LATIROSTRIS (Raffl.).

53. RHIPIDURA ALBICOLLIS (Vieill.).

Two specimens. An Indian and Burmese species not yet recorded from China.

54. ÆTHOPYGA CHRISTINÆ, Swinhoe.

Liuwowan, December.

55. CINNYRIS RHIZOPHORÆ (Swinhoe).

One male, Hoihow, 15th November; in winter plumage. There are no metallic feathers on the forehead, no traces of maroon on the underparts, only a broad gular streak of purple; a few stray metallic-green feathers on the sides of the neck will probably be dropped.

56. Dicæum cruentatum (L.).

57. Emberiza fucata, Pall.

58. [Emberiza aureola, Pall.]

59. Munia topela, Swinhoe.

60. Alauda wattersi, Swinhoe.

Two very dark specimens apparently belong to this race of *A. galgula*.

61. Sturnia sinensis (Gm.).

62. [Spodiopsar sericeus (Gm.).]

63. [Spodiopsar cineraceus (Temm.).]

64. [Corvus levaillanti, L.]

65. [Corvus torquatus, Less.]

66. Pica pica (L.).

67. [Urocissa erythrorhyncha (Gm.).]

68. Dendrocitta sinensis (Latham).

69. Temnurus niger.

Crypsirhina nigra, Styan, Bull. B. O. C. ii. p. vi; Ibis, 1893, p. 55.

Temnurus niger, Sharpe, Bull. B. O. C. iv. p. xix (1892).

A single specimen from Liuwowan, 22nd December. Colour of eyes given as "magenta."

70. Micropternus holroydi, Swinhoe.

Nine specimens, eight of which were shot in May at Nodouha. The breast is more rufous than the throat or lower parts, and this tint extends in the form of a collar round the hind neck. These birds seem very careless of their plumage; most of them are stained about the head with pitch or resin, and one female is covered with it all over; they were probably nesting in pine-trees. Peculiar to Hainan.

71. Iyngipicus kaleensis, Swinhoe.

72. Dendrocopus cabanisi, Malh.

73. Lepocestes pyrrhotis (Hodgson).

One male from Liuwowan, 12th December.

Not previously recorded from China proper or fro Hainan.

74. Upupa indica, Reichenb.

One specimen, dated "Liuwowan, 1st December."

Bill, measured along culmen, 2 inches.

75. Merops sumatranus.

Two small Bee-eaters from the Hummocks (18th Sept. seem to belong to this species, but neither of them is in fu plumage, and it is impossible to decide the question withou other skins to compare them with.

Specimen *a*. Unsexed. General colour above dark gree washed with blue on wings and tail; rump brilliant pal blue; throat grass-green washed with pale blue; breas grass-green, paler towards the abdomen, where it is almos white and is washed with pale blue, more so on unde tail-coverts; a black stripe through the eye. The tw central tail-feathers extend 0·3 inch beyond the others but are worn and should perhaps be longer. Over th crown and mantle a number of chestnut feathers ar appearing. Under surface of wing chestnut. Probably i full plumage this bird would have chestnut head and mantl and a bright blue throat. Length (including worn feathers 8·4 in., wing 4·3; tail, outer feathers, 4; bill from gape 1·7

Specimen β. ♂. Apparently younger. Central tail feathers partially grown. No signs of chestnut on th mantle. Throat very faintly washed with blue. Tail washe with blue, but wings green like the back. Bill only 1·3 in.

76. Eurystomus calonyx, Sharpe.

♀. Hoihow, 29th Sept. Head, back, throat, and breas very dusky; throat-spot not very bright. Tail-feathers washed with blue for their whole length, tipped with greenish. Wing 7·5 in.

77. Cyanops faber, Swinhoe.

Peculiar to Hainan. Specimens from Nodouha.

Forehead and crown black; a broad scarlet band across the occiput; in some specimens this is separated from the green back by a narrow band of bright blue continued from the ear-coverts; in other specimens this band is very faint or obsolete. There is also a faint indication of a yellow or green band between the scarlet and the black crown.

78. HARPACTES ERYTHROCEPHALUS, Gould.

Three specimens from Leimumon, 6th Dec. They agree well with Mr. Oates's careful description of this bird, which has not hitherto been discovered in any part of China. A comparison of skins does not show any difference in this island species.

79. CUCULUS MICROPTERUS, Gould.

80. RHOPODYTES TRISTIS (Less.).

One specimen from Leimumon.

81. [CACOMANTIS MERULINUS (Scop.).]
82. EUDYNAMIS HONORATA (L.).
83. CENTROPUS BENGALENSIS (Gm.).
84. [CENTROPUS SINENSIS (Steph.).
85. CERYLE GUTTATA, Vigors.
86. CERYLE RUDIS (L.).
87. HALCYON PILEATUS (Bodd.).
88. HALCYON SMYRNENSIS (L.).

89. PALÆORNIS FASCIATA (Müll.).

Ting On, 13th Jan.; Nam Fung (26th May); Leimumon.

90. [OTUS ACCIPITRINUS (Pall.).]
91. CIRCUS ÆRUGINOSUS (L.).
92. CIRCUS SPILONOTUS, Kaup.
93. [CIRCUS MACRURUS (Gm.).]
94. [CIRCUS MELANOLEUCUS (Forster).]
95. BUTEO PLUMIPES (Hodgs.).
96. [BUTEO HEMILASIUS, T. & S.]
97. [ASTUR POLIOPSIS, Hume.]
98. [FALCO COMMUNIS (Gm.).]

99. SPILORNIS MELANOTIS, Jerdon.

A female from Liuwowan (19th Dec.) apparently belongs to this small race of *S. cheela*. The breast is uniform, strongly barred. Length 24 in., wing 16·75, tail 11, tarsu 3·7.

100. POLIOAËTUS PLUMBEUS (Horsf.).

One female, Liuwowan, 15th Dec. General colour abov earthy brown, with indistinct pale margins and faint dar shaft-streaks; paler towards the head and neck, which are ash brown; this colour deepens again on the breast, and become dark earthy brown on the lower breast; below this th underparts, including the thighs and under tail-coverts, ar pure white. Quills black, the bases slightly mottled wit white; secondaries brownish on outer web. Tail, uppe aspect dark brown, an indistinct broad subterminal ba blackish, tipped with pale brown; under aspect, subtermin bar blackish brown, below that finely mottled blackish an white. Under wing-coverts and axillaries dark earthy brow like the breast. Length 23 in., wing 18, tail 9·8, tarsus 3.

This specimen is very small, yet I cannot think it is bird of the year.

101. PELECANUS MANILLENSIS, Gm.
102. PHALACROCORAX CARBO (L.).
103. [ARDEA CINEREA, L.]
104. [HERODIAS GARZETTA (L.).]
105. ARDEOLA PRASINOSCELES, Swinhoe.
106. ARDETTA SINENSIS (Gm.).
107. ARDETTA FLAVICOLLIS (Lath.).
108. NYCTICORAX GRISEUS (L.).

109. IBIS MELANOCEPHALA (Lath.).

α. Unsexed, Hoihow, 10th November. Wing 12·75 in tarsus 3·75, tail 5, bill from gape to tip in straight line 5 Entire plumage white; a narrow black line in centre o primary shafts towards the tip. Tertiaries one inch shorte than primaries, and not much broken. Feathers of lowe neck broken but not lengthened. Neck bare 4 inches fro crown behind, 1¼ in. lower in front.

β. ♀, Hoihow, 7th September. Much larger. Win 14·25 in., tarsus 4·1, bill 6·5, tail 6. Shafts of primarie entirely black towards extremity. A good deal of blackis

139. Tringa cinclus, L.
140. Tringa subarcuata, L.
141. Tringa platyrhyncha, Temm.
142. Tringa ruficollis, Pall.
143. [Tringa temmincki, Leisl.]
144. Eurynorhynchus pygmæus (L.).
145. Calidris arenaria (L.).
146. [Tringoides hypoleucus (L.).]
147. Totanus fuscus (L.).
148. [Totanus calidris (L.).]
149. [Totanus glareola (L.).]
150. Totanus glottis, L.
151. Totanus stagnatilis, Bech.
152. [Terekia cinerea (Gm.).]
153. Limosa melanuroides, Gould.
154. Numenius variegatus (Scop.).
155. [Numenius lineatus, Cuv.]
156. Larus saundersi, Swinhoe.
157. Sterna sinensis (Gm.).
158. [Sterna caspia (Pall.).]
159. [Tachybaptes fluviatilis (Tunst.).

XL.—*Bulletin of the British Ornithologists' Club.*
Nos. VII.–IX.

No. VII. (March 28th, 1893.)

The sixth meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 15th of March, 1893.

Chairman: St. George Mivart, F.R.S.

Members present:—E. Bidwell, P. Crowley, H. E. Dresser, W. R. Ogilvie-Grant, F. Penrose, Robert H. Read, P. L. Sclater, F.R.S., J. T. Tristram-Valentine.

Guests: E. Hartert, C. Hose, Prof. G. Martorelli.

On behalf of the Hon. Walter Rothschild, Mr. E. Hartert exhibited the type specimens of a new genus and species of

Fringilline bird from the Sandwich Islands. Mr. Rothschild had proposed for it the name of *Pseudonestor xanthophrys*, and had prepared the following description:—

PSEUDONESTOR, gen. nov.

This genus is nearest allied to *Psittacirostra*, but differs in the following points:—

1. Male and female are similar in colour and markings, whereas they are quite differently coloured in *Psittacirostra*.

2. The female is considerably smaller than the male, whereas the sexes are similar in size in *Psittacirostra*.

3. The principal difference is that, whereas the female of *Pseudonestor* has a beak similar to that of *Psittacirostra* though much more curved, the male of *Pseudonestor* has an enormously hooked bill, much resembling in shape that of a Nestor Parrot, the maxilla being nearly twice the length of the mandible. In *Psittacirostra*, on the other hand, the bills of the sexes are the same.

PSEUDONESTOR XANTHOPHRYS, sp. nov.

Adult male. Top of head and whole upper surface bright olive-green. Lores and superciliary stripe golden yellow. Throat and breast dull yellow, with an olive tinge, which is strongly pronounced on the flanks; under tail-coverts yellow, under wing-coverts yellowish white. Wings and tail blackish brown, each feather bordered with olive-green. Wing 3 inches, tail 1·9, culmen 1·1, lower mandible 0·5, tarsus 0·9.

Adult female. Similar to the male in colour, but much more grey on the back and the abdomen much more tinged with olive. Wing 2·6 to 2·7 inches, tail 1·6, culmen 0·65, lower mandible 0·4, tarsus 0·8.

"Iris dark hazel; upper mandible dark grey, basal half paler; feet slate-colour, soles orange" (*Palmer*).

Hab. Island of Mauai, Sandwich Islands.

Mr. HARTERT also exhibited some interesting specimens of birds from the Sandwich Islands and Laysan:—*Rhodacanthis palmeri* and *R. flaviceps*, Rothsch., from Hawaii; *Telespiza cantans*, Wilson, and *T. flavissima*, Rothsch., from Laysan;

Chloridops kona, Wilson, from Hawaii; *Loxioides bailleui*, Oust., from Hawaii.

A communication from Dr. BOWDLER SHARPE referred to the distribution of the Fin-feet (*Heliornithidæ*). He pointed out that the Burmese *Podica personata* had hitherto been considered to be congeneric with *P. senegalensis* of Africa. Dr. Sharpe showed, however, that its affinities lay with the American *Heliornis fulica*, which had the same-shaped bill and wings and the same soft tail, very different from the stiff-ribbed rectrices of *P. senegalensis*. The webbing of the toes was different in the two genera, and Dr. Sharpe proposed for the Burmese species the new generic name of

HELIOPAIS, gen. n.

H. similis generi '*Heliornis*' dicto, sed digitis tantum ad basin palmatis, nec flavo fasciatis distinguendus.

Typus. *Podica personata*, Gray.

Dr. SHARPE also communicated the diagnoses of some apparently new genera of Cranes (*Gruidæ*), as follows:—

1. LIMNOGERANUS, gen. n.

Genus simile generi '*Grus*' dicto, sed genis anticis nudis, pileo usque ad nucham nudo, loris nudis, regione suboculari et postoculari plumosâ distinguendum.

Typus. *Limnogeranus americanus* (L.).

2. SARCOGERANUS, gen. n.

Genus simile præcedenti, sed pileo antico tantum nudo, pileo postico plumoso, genis posticis quoque plumosis, loris et regione oculari nudis distinguendum.

Typus. *Sarcogeranus leucogeranus* (Pall.).

3. PSEUDOGERANUS, gen. n.

Genus simile generi '*Antigone*' dicto, sed regione paroticâ genisque plumosis, regione supra- et infra-oculari et faciei lateribus nudis, collo postico plumoso, usque ad verticem anticam producto, distinguendum.

Typus. *Pseudogeranus leucauchen* (T.).

Mr. Hartert laid on the table some specimens of a new Finch which he had discovered during his recent visit to the Dutch West India Islands. He proposed to call it

Euetheia sharpei, sp. nov.

♂. *E. bicolori* affinis, differt colore nigro supra ad frontem restricto, nec ad occiput extenso, notæi colore pallidiore, pectore nigro minus clariore.

♀. *E. bicolori* simillima.

Al. 2 ad 2·15 poll.

Hab. Bonaire, Curaçao, Aruba.

Mr. E. Bidwell exhibited the humerus of a Coot, which showed a comminuted fracture afterwards completely healed.

Mr. Robert Read made some remarks on the changes of plumage in the Black-headed Gull (*Larus ridibundus*), and exhibited the head of a recently killed specimen which clearly proved that the black hood was gained in the spring by a change of colour in some of the feathers as well as by a complete moult in others.

No. VIII. (May 1st, 1893.)

The seventh meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 19th of April, 1893.

Chairman: P. L. Sclater, F.R.S.

Members present:—E. Bidwell, P. Crowley, H. E. Dresser, W. R. Ogilvie-Grant, St. George Mivart, F.R.S., H. J. Pearson, F. Penrose, Robert H. Read, Howard Saunders (*Treasurer*), Henry Seebohm, R. Bowdler Sharpe, G. E. Shelley, J. Stoneham, J. T. Tristram-Valentine.

Guests: E. Hartert, W. Hartmann, R. B. Newton, Hon. Walter Rothschild, W. H. Simpson.

Mr. W. R. **Ogilvie-Grant** exhibited some skins of rare species of Game-Birds, the principal being *Caccabis magna*, Prjev., and *Phasianus satscheunensis*, Prjev., specimens of which had recently been sent in exchange to the British Museum by Dr. Pleske.

Mr. **Ernst Hartert** exhibited a new Scops-Owl, which he characterized as follows:—

Pisorhina solokensis, sp. n.

Top of head and neck deep brown, nearly blackish; ear-tufts white, with black on the tips and outer webs of the feathers; a white line, varied with some small blackish spots, extending from the ear-tufts over the eyes, and meeting on the forehead; a white spot on the occiput; a broad, whitish, nuchal band and another one on the lower hind neck. Back and rump blackish brown, with pale rusty brown spots and blotches. Rectrices similar in colour to the back, but somewhat duller. Primaries deep brown, with very pale brown, almost whitish, spots along the outer webs; secondaries spotted on both webs. Wing-coverts deep blackish brown, with very large white spots on the outer webs. Throat and breast mixed pale brown, rusty, blackish, and whitish, more albescent towards the abdomen. Lower abdomen, vent, and under tail-coverts white. Tarsal plumes nearly white. Under wing-coverts brown and white. Toes entirely bare up to the tarsus, which is thickly feathered, yellowish brown (in skin). Bill whitish horn-colour (in skin). Total length about 10 inches, wing 6·7, tail 3·1, tarsus 1·2, middle toe 0·9, culmen 1·2.

Hab. Hills of Solok, west coast of Sumatra.

Remarks. The type-specimen belongs to the Stuttgart Museum, and was sent me for comparison by Count von Berlepsch, who believed it to be new to science. Its nearest ally is *Scops everetti*, from which it is chiefly distinguished by the great amount of white on the ear-tufts and wing-coverts and by the white bands on the neck, as well as by the pure white lower abdomen and whitish tarsal plumes.

I am indebted to Professor Lampert, of the Stuttgart

Museum, and to Count Berlepsch, for the opportunity of describing this new species from an island in the natural history of which I am particularly interested.

The Hon. WALTER ROTHSCHILD exhibited an example of a new species of Rail, which he described as follows:—

RALLUS MUELLERI, sp. n.

Upper surface of head, occiput, and neck brownish red, faintly and irregularly striated with black; back and rump bright chestnut, with the centres of the feathers black; wings brownish black, faintly edged with rufous grey; cheeks reddish grey; centre of the throat reddish white; lower part of throat and breast rufous grey; flanks, abdomen, and under tail-coverts black, each feather tipped with pale rufous, and with two white bands; tail rufous, with indistinct grey bands. Wing 3·3 inches, culmen 1·1, tarsus 1·1, central toe with claw 1·3, tail 1·3.

Hab. Auckland Island, south of New Zealand.

Remarks. This little Rail in general appearance resembles *Rallus lewini* from Australia, but on comparison presents so many important differences that it might almost be separated generically. The chief distinguishing feature of the new species is the enormous development of the feathers on the back and rump, which have become a huge bunch like that of the Puff-birds (*Bucco*) of South America.

The single specimen was sent to me for description by Count Berlepsch, who considered it to belong to a new species. It is the property of the Stuttgart Museum. It is named in honour of the famous botanist, Baron von Müller, of Melbourne, who presented the specimen.

The Hon. WALTER ROTHSCHILD exhibited three new birds which he had lately received from his collector in the Sandwich Islands, and characterized them as follows:—

ACRULOCERCUS BISHOPI, sp. n.

Adult male. Head and occiput black, with a slight gloss; shafts of the feathers rather paler. Rest of the upper and entire under surface smoky black, with narrow white shaft-lines to the feathers. Axillary tufts smaller than in *A. nobilis*, but also bright yellow. Ear-coverts with an elongated tuft of very narrow feathers about an inch long and of a deep golden yellow. Under tail-coverts golden yellow. Under wing-coverts sooty black, with indistinct white patches. Tail shorter than in *A. nobilis*, but more pointed, as in *A. apicalis*. Total length about 11 inches, wing 4·5, tail 6·5, tarsus 1·5, culmen 1·4.

Adult female. Similar to the male, but considerably smaller. Wing 4 inches, tail 5, tarsus 1·35, culmen 1·2.

Hab. Island of Molokai.

Named in honour of Mr. Bishop, of Honolulu.

HIMATIONE NEWTONI, sp. n.

Closely allied to *H. montana* of Lanai, but has the upper surface dark olive-green instead of olive-yellow. Rump and upper tail-coverts green instead of bright yellow. The yellow on the forehead is much less extended. The underparts, instead of being entirely yellow, are only yellow in the central area; flanks and sides of body olive-green. Under tail-coverts yellowish white instead of yellow as in *H. montana*. Wing 2·5 to 2·6 inches, tail 2 (2·75 in *H. montana*, according to Mr. Scott Wilson), tarsus 0·87, culmen 4·75.

Hab. Island of Mauai.

HIMATIONE WILSONI, sp. n.

Similar to *H. stejnegeri* of Kauai, but smaller, the beak considerably less and straighter, in this respect resembling *H. virens* of Hawaii. General colour more yellowish, especially on the rump and under surface. *Female* paler than the male. Wing 2·45 inches, tail 1·65 (nearly 2 inches in *H. stejnegeri*), culmen 0·55 (nearly or fully 0·8 in *H. stejnegeri*), tarsus 0·8.

Hab. Island of Mauai.

Dr. BOWDLER SHARPE stated that during a recent visit to Leyden he had examined the type of *Rallus sandwichensis* of Latham, and wished to apologize to Dr. Hartlaub for

having suggested that the bird was probably the same
Pennula ecaudata. The specimen had probably faded co
siderably from its original colour, as appeared to be prov
by the deep vinous chestnut of the lower abdomen and ve
these parts having been more shaded from the light, a
here the colour of the under surface approximated to th
of *P. ecaudata.* The rest of the under surface was o
rusty vinous colour, and seemed to be much as Lath
described it originally. Nothing, however, could have alte
the colour of the back, which still retained the streak
appearance indicated by Latham.

Dr. Sharpe also stated that an examination of the type
Grus cinerea longirostris, T. & S., in the Leyden Museu
showed that this name applied to *Grus mexicana* and not
Grus canadensis, as was generally supposed to be the case

Mr. Sclater made some remarks on the splendid ser
of mounted birds, illustrative of the Italian avifauna, wh
had been collected for the Museum of the Reale Istitu
degli Studii Superiori, of Florence, by Dr. E. H. Giglio
The most recent addition to the ornis of Italy was sta
to be *Lanius algeriensis.*

He also mentioned the migratory birds which had visit
the s.s. 'Oruba,' between Gibraltar and Malta, from Mar
29th to April 1st. He had been disappointed at the sm
numbers observed. Those recognized were the Swallow, b
Redstart, Song-Thrush, Wheatear, and Robin. A Night
was on the ship for several hours on April 1st, when neari
Naples.

The Hon. Walter Rothschild exhibited a curious m
lanistic variety of a Razorbill (*Alca torda*), and examp
of some interesting Asiatic species, *Merula kessleri, Ibid*
rhynchus kaufmanni, &c.

Mr. Robert Read exhibited a Black-headed Gull, whi
had nearly attained the plumage of the adult, but had t
bill and feet of an orange colour.

Dr. **Bowdler Sharpe** made some remarks illustrated by diagrams, on fossil birds, showing our present state of knowledge of extinct species.

No. IX. (June 1st, 1893.)

The eighth meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 17th of May, 1893.

Chairman: **Henry Seebohm.**

Members present:—E. **Bidwell**, W. E. **De Winton**, H. E. **Dresser**, H. O. **Forbes**, W. **Graham**, E. **Hartert**, A. P. **Lloyd**, F. **Penrose**, Hon. **Walter Rothschild**, **Howard Saunders** (*Treasurer*), R. **Bowdler Sharpe**, **Charles Stonham**, Col. R. W. **Studdy**, J. T. **Tristram-Valentine**, H. M. **Upcher**.

Mr. H. O. **Forbes** exhibited the eggs of some rare species of birds from the Chatham Islands, amongst which were those of *Thinornis novæ zealandiæ* and *Gallinago pusilla*, of which birds the nestlings were also shown. He also exhibited the egg of *Cabalus modestus*, which had been obtained on Mangare, one of the Chatham group, by Mr. Hawkins. The egg was *white*, but its Ralline character was indicated by a faint double spotting of grey and rufous. It measured:—axis 1·45, diam. 1·1.

Mr. **Forbes** also exhibited adult males, females, and young birds of *Cabalus modestus*, and remarked that there could now be no question of the validity of this species, as distinct from *C. dieffenbachii*, and that he must retract his former opinion on this point (above, p. 253).

Dr. **Bowdler Sharpe** observed that it was a singular fact that this little Rail should possess in its adult plumage the exact dress which might have been expected to characterize the young of *C. dieffenbachii*; and even with the evidence now before them it was difficult to believe that the birds were fully adult. Count Salvadori's opinion (above, p. 255) with regard to the specimen exhibited at the third meeting of the Club had now been proved to be the correct one.

The CHAIRMAN read a paper on behalf of Canon Tristram, F.R.S., entitled "On an undescribed Species of Snipe from the New Zealand region," in which the author made the following remarks :—

In 1846 Mr. G. R. Gray, in the 'Birds of the Erebus and Terror,' described a Snipe from the Auckland Islands as *Gallinago aucklandica*. There is no evidence that this bird has ever occurred in New Zealand. In 'The Ibis' for 1869, p. 41, Sir W. Buller described a second species from the Chatham Islands as *Gallinago pusilla*. Very few specimens have been received, but the species has twice been obtained in New Zealand (to which it is evidently an occasional wanderer): once by Sir James Hector in the Gulf of Hauraki, and once by Mr. F. B. Hill on Little Barrier Island. All doubts as to its being a distinct species have recently been set at rest by the large number of specimens obtained in the Chatham Islands by the collectors of the Hon. Walter Rothschild and Mr. H. O. Forbes. I have examined more than twenty specimens, and find that all of them agree in every respect, and cannot be confused with the Auckland Island species. But when Sir W. Buller published his second edition of the 'Birds of New Zealand,' he had unfortunately sent back to New Zealand his only specimen from the Chatham Islands, and borrowed from me a specimen which had been obtained by Baron A. von Hügel on the Snares, seventy miles south of the southern extremity of New Zealand. This I had put down as *Gallinago pusilla*, having at that time never seen a Chatham Island specimen. It is very accurately figured and coloured in Buller's second edition; but it proves to be very different from the true *G. pusilla*. The only other example in existence, so far as I am aware, is a second specimen obtained on the Snares at the same time by Baron A. von

Hügel, and in the collection of the Hon. Walter Rothschild. I propose to discriminate it as

Gallinago huegeli, sp. nov.

G. pileo et loris nigro-fuscis; corpore supra rufescente cervino variegato; plumis rufo strictè marginatis; cervice rufescente, brunneo densè striatâ; pectore et abdomine castaneis brunneo densè fasciatis; remigibus brunneis; rectricibus quatuordecim, tribus externis perangustis, margine albo; tarsis et pedibus albidis. Long. alæ 4·1, rostri 2, tarsi ·9.

Hab. Snares Islands.

This species may at once be distinguished from its congeners by its much redder hue, and especially by the remarkable fineness and delicacy of its markings, the edgings of the upper plumage and the striation and bands on the lower surface being very much smaller, closer, and more distinct. In the other two species the abdomen and thighs are whitish, while in this they are thickly barred. In this species the three outer tail-feathers on each side are attenuated with a white edging; in the others only the two outer pairs of tail-feathers appear to be so attenuated.

There would therefore appear to be three species of *Gallinago* in the islands round New Zealand:—*G. aucklandica* in the Aucklands, *G. pusilla* in the Chathams, and *G. huegeli* in the Snares, all being sedentary, or nearly so, in their several localities. To these further research will probably add a fourth from Antipodes Island, whence a single specimen has been received by Sir Jas. Hector, who states it to be larger, darker in plumage, and with a more curved bill than the Auckland species. Unfortunately he has not described it.

I subjoin the measurements of the three species:—

	Bill. inch.	Wing. inch.	Tarsus. inch.
Gallinago aucklandica	2·2	4·2	1·0
" "	..	4·1	1·0
G. huegeli	2·0	4·1	·9
G. pusilla	1·7	3·6	·8
"	1·5	3·5	·8
"	1·7	3·5	·8
"	1·6	3·7	·8

The Hon. Walter Rothschild exhibited and described a new species of Albatross:—

DIOMEDEA IMMUTABILIS, sp. n.

Adult. Head, neck, lower rump, and entire under surface pure white; space in front of the eye sooty black; wings and wing-coverts blackish brown; interscapular region, back, and upper part of rump paler and more smoky brown; tail black, fading into white at the bases; under wing-coverts mixed, blackish brown and white: "bill grey, darker at base, tip blackish brown; base of under mandible pale yellow; iris brown; tarsi and feet fleshy pink" (*H. C. Palmer*). Wing 19 inches, bill 4, tarsus 3·2, middle toe with claw 4·3.

Remarks. This Albatross belongs to the typical section of *Diomedea* as limited by Mr. Salvin, and is at once distinguished by attaining the coloration of the adult bird in the first plumage. The young in down is pale brown with a blackish-brown bill.

Hab. Laysan Island, North Pacific.

Mr. Howard Saunders made some remarks upon the distribution of Birds in France, especially with reference to some species which passed beyond that country as far as Great Britain. He pointed out that a great part of France consisted of elevated table-land, and that one main line of migration passed along the Rhone Valley and across the Langres Plateau on the east; while on the west side the line ran parallel with the coast until it was deflected eastward by the high ground in Britanny and Manche—so that the Channel Islands received few visits from rarities. In Normandy, however, *Tichodroma muraria*, *Gyps fulvus*, *Larus melanocephalus*, and many other unusual visitants to England had occurred several times; *Passer petronia*, *Emberiza cia*, *Ægithalus pendulinus*, and *Vultur monachus* had also been obtained, while *Aquila pennata* had even bred there. On the other hand, *Picus martius*, said—falsely as he believed—to have occurred in England, had never been met with in Normandy. He further remarked upon the Brenne district in the centre of France as promising an unusually fine field for ornithologists, and mentioned some limestone cliffs in the Cevennes, which were undoubtedly frequented by Vultures, although proof of their breeding there was as yet wanting.

Mr. Osbert Salvin, F.R.S., contributed descriptions of two supposed new species of Humming-birds of the genus *Metallura* from Ecuador, which he proposed to call:—

1. Metallura atrigularis, sp. n.

♂ ad. Similis *M. primolinæ* sed gula media intense nigra, plumis ad basin castaneis et medialiter fascia transversa angusta amethystina notatis. Aliter ferè ut in sp. cit.

♀. Gula inornata, rectricibus lateralibus albido terminatis.

Long. alæ 2·2 poll., caudæ 1·5, rostri a rictu 0·65.

Hab. Ecuador: Hills near Sigsig, not far from Cuenca, alt. 12,000 feet (*O. T. Baron*).

2. Metallura baroni, sp. n.

♂ ad. Supra saturate cupreo-viridis, capite obscuriore; subtus cum tectricibus subcaudalibus ejusdem coloris; gula tota saturate amethystina micante; cauda saturate viridi infra nitentiore. Long. alæ 2·2 poll., caudæ 1·4, rostri a rictu 0·65.

♀ ad. Mari similis, sed subtus plumis omnibus ad basin cervinis, abdomine toto maculis discalibus obscure viridibus; gula maculis saturate amethystinis notata; rectricibus externis vix sordide albo-terminatis.

Hab. Ecuador: Hills near Cuenca, alt. 12,000 feet (*O. T. Baron*).

Mr. O. T. Baron had recently submitted to Mr. Salvin beautifully prepared specimens of both sexes of these species, which were quite distinct from any other species known to him. Both of them belonged to the same section of the genus as *M. primolina.*

Dr. Bowdler Sharpe proposed the following new genera for the *Otides* or Bustards:—

Heterotis, gen. n. Simile generi "*Compsotis*" dicto, sed tarso brevi distinguendum.

Typus est *Heterotis vigorsi* (Smith).

Other species belonging to this new genus were *H. rueppe*
(Wahlb.) and *H. humilis* (Blyth).

NEOTIS, gen. n. Simile generi "*Lissotis*" dicto, sed rost
longiore, culmine digitum medium cum ungue exceden
Typus est *Neotis ludwigi* (Rüpp).

Other species of this genus were *N. burchelli* (Heugl
N. denhami (Childr.), *N. caffra* (Licht.), and *N. heugl*
(Hartl.).

HOUBAROPSIS, gen. n. Simile generi "*Houbara*" dicto, s
plumis jugularibus valde elongatis, pileo nuchaque ali
cristatis, tarsis longissimis distinguendum.
Typus est *Houbaropsis bengalensis* (Gm.).

The Hon. WALTER ROTHSCHILD exhibited a fine pair
Paradisea gulielmi-secundi from Kaiser Wilhelm's Land
N.E. New Guinea.

Mr. H. O. FORBES wished to make a correction w
reference to the genus he had described at a former Meeti
of the B. O. C. as *Diaphorapteryx* (see above, p. 254). I
had accepted the opinion of Prof. Newton that the remai
from Mauritius and those from the Chatham Islands b
longed to distinct genera, and had adopted his suggesti
of the name *Diaphorapteryx*; but after personally examini
the Mauritian remains at Cambridge, Mr. Forbes cou
not see his way to agree that the two forms were generica
different. He was therefore constrained to discard his n
genus and to reinstate that of *Aphanapteryx* for the Oc
dromine remains from both the above-named islands.

Mr. Forbes also exhibited the Dinornithine tibiæ on whi
he had based a new genus, *Palæocasuarius*, and pointed o
that the bone differed from the tibia of *Dinornis* (in its wide
sense) in being straighter and less twisted on itself, so th
the position of the ridge forming the inner wall of t
groove for the tendons of the extensor muscles ran along t
inner side of the bone, as in *Casuarius*. As in the latt
genus also, it took a marked bend inwards and backwar
before joining the epicnemial crest, while a line joining t

centre point between the distal condyles and the epicnemial ridge left a considerable space between it and the wall of the groove. There was no intercondylar eminence in the intercondylar channel, and the orifice of the extensor foramen opened more longitudinally than in *Dinornis* and pointed downwards. Mr. Forbes described two species, *P. haasti* and *P. velox*, distinguishing them by their size.

XLI.—*Notices of recent Ornithological Publications.*

[Continued from p. 275.]

65. *Agassiz on the Progress of the Museum of Comparative Zoology.*

[Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College to the President and Fellows of Harvard College for 1891-92. Cambridge, U.S.A., 1892.]

The Museum of Comparative Zoology at Harvard College, Cambridge, has received a valuable contribution during the past Academic year by the donation to it of the "Greene-Smith Collection" of about 1200 mounted North-American birds, "in many respects the most complete and valuable "that has ever been brought together, at least by private effort." An important addition has also been made by the purchase from Mr. Scott B. Wilson of a series of birds from the Sandwich Islands.

Prof. Agassiz complains, not without reason, we think, that in consequence of the great increase in size of the undergraduate classes at Harvard, the whole time of the Professors of the Museum is taken up by teaching, instead of being mainly devoted to original investigation, for which the Museum was primarily intended. It is not the province of the Museum, he alleges, to supply such instruction. This should be done by the University.

66. *Büttikofer on a Species of* Rhipidura.

[A Complementary Note to my Review on the Genus *Rhipidura*. By J. Büttikofer. Notes Leyden Mus. xv. p. 113.]

Mr. Büttikofer, referring to his recent review of the genus of Flycatchers (see above, p. 265), is now able to distingui a new species, *Rhipidura meyeri,* of the Arfak Mountai from *R. cinnamomea,* of Eastern New Guinea. He h previously done this in MS., but had changed his views a had abolished the name which he now resuscitates.

67. *Büttikofer on* Merula javanica *and its allies.*

[On *Merula javanica* and its nearest Allies. By J. Büttikofer. N Leyden Mus. xv. p. 107.]

The results of this paper have been already stated Mr. Seebohm (above, p. 219). Mr. Büttikofer describ *Merula celebensis* as new, and vindicates the claims of *Mer* *schlegeli,* from Timor, to stand as distinct.

68. *Chapman on Cuban Birds and on the Origin of* *Antillean Avifauna.*

[Notes on Birds and Mammals observed near Trinidad, Cuba, w Remarks on the Origin of West-Indian Bird-life. By Frank M. Chapm Bull. Amer. Mus. Nat. Hist. iv. p. 279.]

Mr. Chapman appears to have made a most pleasant a successful excursion to the south coast of Cuba in the sprin of last year. The town of Trinidad, which he selected as h centre of operations, lies inland between 3 and 4 miles fro the port of Casilda, and is situated 400 miles from the easte and 350 miles from the western extremity of the island. Th fertile valley of Trinidad itself is mostly devoted to sugar-can but various spots in it and on the adjacent hills are good f collecting, and amongst these the valley of San Juan Letran, eight miles north of Trinidad, at an elevation 2000 feet in the San Juan Mountains, is specified as th "realization of a naturalist's dream of the Tropics." E sconced here in an "unoccupied thatched cabin," the fort nate naturalist found birds "exceedingly abundant," attract to a focus by the numerous fruit-trees in the adjacent clearin On one occasion, sitting under a tree, Mr. Chapman observ examples of 18 species within a period of ten minutes.

In the systematic part of the paper the author gives not on 99 birds obtained or observed during his excursion, amongst which *Conurus enops, Priotelus temnurus,* and *Todus multicolor* were "common." The following species and subspecies are described as new:—*Rallus longirostris cubanus* and *Columbigallina passerina terrestris* from Cuba; *Pitangus jamaicensis* from Jamaica; and *Dendroica petechia flaviceps* from the Bahamas. *Scolecophagus atro-violaceus* is referred to a new genus of Icteridæ called *Ptiloxena,* from the peculiar structure of its contour-feathers. The concluding section of the paper is devoted to remarks on the origin of West-Indian Bird-life, which it is rather difficult to follow without the aid of a map. It must suffice to say that the generally-recognized division of the Antilles into two groups, the Greater and Lesser Antilles, is fully recognized, as also that the zoological influence of the Lesser on the Greater Antilles is of comparatively recent date, the former having been raised, as Prof. A. Agassiz has shown, "long after the range of the greater West Indian Islands existed." The Greater Antilles were probably connected with the continent by land extending between the Mosquito coast and Jamaica at a time when sea-passages between the Caribbean Sea and the Pacific were still open, and when the representatives of some 12 families now characteristic of the Central-American Ornis had not arrived from the south. For this reason these families are not represented in the Ornis of the Greater Antilles, which contains only survivors of the forms of the ancient fauna of Central America, "preserved through the isolation afforded by an insular life."

69. *Chapman and Buck's 'Wild Spain.'*

[Wild Spain (España Agreste). Records of Sport with Rifle, Rod, and Gun, Natural History and Exploration. By Abel Chapman, F.Z.S., and Walter J. Buck, C.M.Z.S., of Jerez. With 174 illustrations, mostly by the Authors. London: Gurney and Jackson, 1893.]

Mr. Chapman's name is already well known to readers of 'The Ibis,' and will not fail to call immediate attention to the present volume, in which he and his coadjutor, Mr. Buck, furnish us with a large quantity of most interesting information on the birds of the Peninsula and on other cogn subjects. Perhaps we may fairly say that the Bustards, t Flamingoes, and the Raptores of Spain are the heroes of t book, although the four-footed animals of the sierras a marismas have their share of attention. Nor are the small Passerines overlooked, although, as we are informed, the wo is planned essentially from the view of the "sportsma naturalist." Besides the many references in the text, a L of Spring Migrants to Spain, with date of their arrivals Andalucia, is given in the Appendix, and Mr. A. C. Chapm contributes some interesting "Spring-Notes" on the bir of Navarre. The numerous illustrations, taken mostly fro the authors' sketches, relate mainly to birds, and are, in t majority of cases, capital. Altogether, 'Wild Spain' w be found to be a rare treat to the ornithologist.

70. *Collett on* Lanius excubitor *and allied forms.*

[Om *Lanius excubitor*, og dens forskjellige Formers Optræden i Nor Af R. Collett. Archiv f. Mathem. og Naturv. Kristiania, xvi. p. 50.]

Prof. Collett writes on *Lanius excubitor* and the vario forms of it that occur in Norway, which he arranges und six heads. These exhibit a series of stages, beginning wi extra-typical *L. excubitor* (*i. e.* the so-called *L. homeyeri*) a passing through typical *L. excubitor* and several intermedia forms into *L. major* and nearly typical *L. borealis.* Remar on the distribution of *L. excubitor* in Norway, and its habit are appended.

71. *Collett on Birds from the New Hebrides.*

[On a Collection of Birds from Tonga, New Hebrides. By R. Colle Vidensk.-Selskabs Forhandl. Christiania, 1892, No. 13.]

An account is given in this paper of a small collection birds in spirit made by Mr. O. Michelsen in the New Hebride The specimens are referred to 20 species, amongst which a *Rhipidura* probably new, but the example is not in a su ficiently perfect state to warrant description.

72. *Foster's Bibliography of American Naturalists.*

[Bulletin of the United States National Museum. No. 40. Bibliographies of American Naturalists. IV. The Published Writings of George Newbold Lawrence, 1844–91. By L. S. Foster. 8vo. Washington: 1892.]

The 40th number of the Bulletin of the U.S. National Museum is occupied by a very thoroughly compiled index to the published writings of Mr. G. N. Lawrence, of New York, the Nestor of American ornithologists. This is prefaced by a biographical sketch and portrait of our much-esteemed Foreign Member, now nearly 87 years of age. His first ornithological paper was written in 1844, and his last in 1891. Altogether, his memoirs are 121 in number. In the case of all these, besides the full title, Mr. Foster gives a list of the species referred to in every paper, and the pages at which they are mentioned. This is followed by an alphabetical list of the new species and subspecies described by Mr. Lawrence, 323 in all, which will be very useful to the working ornithologist. The genus *Lawrencia* of Ridgway, of the family Tyrannidæ, is called after his name, besides which 19 species, instituted by various authors, bear the specific term "*lawrencii.*" Few of our craft, indeed, have accomplished such long and good service in the cause of Science.

73. *Giglioli and Manzella on Italian Birds.*

[Iconografia dell' Avifauna Italica, ovvero tavole illustranti le specie di Uccelli che trovansi in Italia, con brevi descrizioni e note. Testo del Dott. Enrico Hillyer Giglioli; tavole di Alberto Manzella. Fasc. xxviii.-l. Folio. Prato: 1885–92.]

Since we last noticed this work, nearly seven years ago, considerable progress has been made, parts 28–50 having been issued; and we are not without hopes that it may be brought ultimately to a conclusion within a reasonable period. It will be a great satisfaction to the subscribers, and no doubt to Professor Giglioli also, to be able to arrange the plates and bind up the volumes. The figures of the 'Iconografia,' though not always above criticism, are mostly well drawn and nicely coloured, and render the species easily recog-

nizable. The work, when complete, will form a last
testimony to the zeal and energy of the Professor in accu
lating the excellent collection of Italian birds in the "R
Istituto" in Florence, upon which it has been mainly ba
Among interesting species lately figured, we may call
tention to *Picus lilfordi* from Dalmatia, *Sitta whiteh*
from Corsica, *Cypselus affinis* and *Ruticilla moussieri,*
stragglers upon the Italian coast, and *Caprimulgus asiati*
lately taken near Genoa.

74. *Gordon on 'Our Country's Birds.'*

[Our Country's Birds and How to Know Them. A Guide to all
Birds of Great Britain. By W. J. Gordon. With an Illustratio
Colour of every Species and many original Diagrams by G. Willis
R. E. Holding. 8vo. London: 1892.]

'Our Country's Birds' is certainly an ornitholog
multum in parvo of no ordinary description. All the
"British Birds" are described in a small volume of 150 pa
and figured in 32 coloured plates. Moreover, chapters
given on "sortation," "identification," and "classificatio
and a great deal of useful information besides. Saunde
Manual' is certainly more to our taste, but many of
figures in this little book are very nicely drawn, and
author is in many respects evidently quite "up to date."

75. *Harvie-Brown on the Birds of the Shetlands.*

[Contributions to a Fauna of the Shetland Isles. Autumn Notes.
J. A. Harvie-Brown, F.R.S.E., F.Z.S. Ann. Scottish Nat. Hist. 1
p. 9.]

Mr. Harvie-Brown has paid two visits to the south
portion of the Shetland group in the autumnal months,
gives us as the results a list of 84 species of birds met wi
and notes upon them. The Raven (*Corvus corax*)
"often seen in dozens and half-dozens," the Merlin (*Fa*
æsalon) was "very common," and several examples of
Spotted Crake (*Porzana maruetta*) are spoken of.

76. *Hudson's 'Idle Days in Patagonia.'*

[Idle Days in Patagonia. By W. H. Hudson, C.M.Z.S. London: Chapman and Hall, 1893.]

This is not at all a "bird-book" in the ordinary acceptation of the term, but it contains numerous allusions to and illustrations of birds, and will be read with pleasure by those who have appreciated the author's charming volume 'The Naturalist in La Plata.'

The present work does not contain a complete account of the author's visit to the Rio Negro district of Patagonia (which took place as long ago as 1871), but is made up of a series of essays based on his experiences during that excursion. Some of these have been already published, more or less completely, in certain Reviews and Magazines, but are now combined into a harmonious whole. As already stated, many allusions to our feathered favourites occur throughout the volume, and a whole chapter is devoted to bird-music in South America. In this essay the author endeavours to prove that the ordinary idea that tropical birds, though they doubtless excel those of temperate countries in beauty of plumage, are inferior in melody, is erroneous. It is shown, on the contrary, that South America at least is "not wanting in songsters," the fact being that its ornis comprehends some 1200 Oscines—the section of Passerine birds in which the singing-organs are most highly developed.

77. *Koenig on the Birds of Tunis.*

[Zweiter Beitrag zur Avifauna von Tunis. Von Dr. A. Koenig. 8vo. Naumburg, 1893. (Separatabdruck, J. f. O. 1892-93.)]

Dr. Koenig has kindly favoured us with a separate copy of his second essay on the birds of Tunis, extracted from the 'Journal für Ornithologie' for 1892 and 1893, the first article on the same subject having appeared in the same journal for 1888. During the intervening period the author has worked hard to make additions and corrections to his former account of this interesting avifauna, and in May, 1891, made a journey to the Beylik for the special purpose

of augmenting his knowledge of this subject. The first p
of the present article is devoted to an account of
journey, while the second contains a systematic list of bi
of Tunis, with copious notes on the results arrived at.
route taken by Dr. Koenig on this occasion, which is ill
trated by a map, was from Susa to Gábes parallel to
coast, while excursions were also made from Susa nor
wards. The systematic list contains the names of
species, thus adding 28 to the author's former summary
the Tunisian avifauna. Upon some points in this list
will offer a few remarks.

The occurrence of *Cypselus affinis* in Tunis is of gr
interest. Examples of this eastern species were obtained
Dr. Koenig on Djebel el Meda, near Gábes, in the month
March.

Specimens of *Hirundo rufula*, purchased from a dealer
Tunis, were stated to have been killed in the neighbo
hood.

The Raven of Tunis is now recognized to be *Corvus tin*
tanus, not *C. corax*.

Dr. Koenig vindicates the claims of *Galerita mac*
rhyncha, Tristram, to be distinct from *G. cristata*, to whi
it has been recently united in the 'Catalogue of Bird
(xiii. p. 628), and considers *G. randoni*, Loche, to be t
same species. He met with it in the vicinity of Gábes.

One example of Clot-Bey's Lark (*Rhamphocorys clot-be*
was obtained at Djebel el Meda.

Dr. Koenig holds fast to the distinctness of his *Alæm*
margaritæ (described from specimens collected during
former journey), of which he again obtained examples
the desert near Gábes. Dr. Bowdler Sharpe (Cat. B. xi
p. 526) has united it to *Chersophilus duponti*, from whic
however, it would appear to be perhaps subspecifical
different.

It has hitherto been supposed that the Chaffinch (*Fringil*
cœlebs) is entirely replaced in North Africa by the near
allied *F. spodiogenys* and similar forms. It would appea
however, that the European Chaffinch visits Tunis in winte

and occasionally lingers there far into spring. Dr. Koenig met with it in flocks in March and April in two localities north of Susa.

Three coloured plates, illustrating ***Drymœca saharæ, Saxicola mœsta,*** and ***Rhamphocoris clot-bey,*** are annexed to this essay, which is of great interest to students of the European Ornis. We hope that Dr. Koenig will find means to visit Tunis again and bring home still further information on its attractive avifauna.

78. *Le Souëf on the Nesting of* Ptilorhis victoriæ.

[Nest and Egg of Queen Victoria's Rifle-bird (*Ptilorhis victoriæ*). By D. Le Souëf. Proc. R. Soc. Victoria, 1892.]

Mr. D. Le Souëf now figures and describes the nest and egg of the Victorian Rifle-bird (*Ptilorhis victoriæ*), obtained by himself and Mr. H. Barnard in November, 1891, on one of the Barnard Islands (*cf.* Ibis, 1892, p. 350).

79. *Lorenz on the Birds of Austro-Hungary.*

[Die Ornis von Oesterreich-Ungarn und den Occupationsländern im k.k. naturhistorischen Hofmuseum zu Wien. Zusammengestellt von Dr. Ludwig, Ritter Lorenz von Liburnau. Ann. d. k.k. nat. Hofmus. vii. p. 306, 1892.]

This is a systematic list of the specimens contained in the separate collection of the new Vienna Museum, which is devoted to the illustration of the avifauna of the Austro-Hungarian Monarchy. It appears that the series contains about 1600 mounted and 10,900 unmounted specimens, of which the dates, localities, and authorities are given. In an appendix the desiderata are specified.

A similar catalogue of the specimens in the British Collection at South Kensington would be very desirable, and would, no doubt, lead to the acquisition of many additional specimens of our native birds.

80. *Meyer on* Aquila rapax *from Astrachan.*

[*Aquila rapax* (Temm.) von Astrachan, nebst Bemerkungen über verwandte Formen, besonders *Aquila boeki*, Hom. Von A. B. Meyer. Abhandl. Gesell. 'Isis' in Dresden, Abh. 1892, p. 67.]

Dr. A. B. Meyer discusses at some length the prop determination of the specimen of *Aquila* from Astracha obtained by Henke in 1874, and referred by Mr. Seeboh (Ibis, 1882, p. 206) to *A. rapax*. Dr. Meyer finally com to the conclusion that Mr. Seebohm was correct in his vie though it necessitates an extension of the previously know range of this eagle into the delta of the Wolga, which, how ever, is not very far from Turkey and Palestine, where it i certainly met with. *Aquila boeki* of Homeyer, after exam nation of the type, is considered to be a young *A. nævi* with a tendency to bright coloration.

81. *Salvadori on a new Fruit-Pigeon.*

[Descrizione di una nuova specie di Colombo del genere *Ptilopus*. P Tommaso Salvadori. Boll. dei Mus. Zool. ed Anat. Comp. R. Uni Torino, vii. no. 135.]

Under the name *Ptilopus tristrami*, the author describes new species of the numerous genus from Hivaoa, Marques group, based on a specimen in Canon Tristram's collectio The species is allied to *P. mercieri*, with which it has bee confounded by prior authorities.

82. *Satounine on the Birds of Moscow.*

[Congrès Internationaux d'Anthropologie et d'Archéologie préhisto rique et de Zoologie à Moscou, 1892. Matériaux réunis par le Comi d'organisation des Congrès concernant les expositions, les excursions les rapports sur des questions touchant les congrès. Primitiæ Faun Mosquensis. Aves. Par K. Satounine. Royal 8vo. Moscou : 1892.]

The memoirs collected for the benefit of the attendants the International Congress of Anthropology, Archæology, an Zoology held at Moscow last August contain a nominal lis of the birds of the surrounding district—233 in number.

The categories under which the species are classed in thi list seem to us to be well selected, and the abbreviation appropriate. We add a list of them :—

s. = *sedens*, resident.
n. = *nidulans*, breeding.
æ. = *æstivus*, summer visitor.

h. = *hyemalis*, winter visitor.
t. = *transvolans*, on passage.
e. = *erraticus*, accidental visitor.
R. = *rarus*, rare.
R.R. = *rarissimus*, very rare.

83. *Sharpe's 'Monograph of the* Paradiseidæ.'

[Monograph of the *Paradiseidæ*, or Birds of Paradise, and *Ptilonorhynchidæ*, or Bower-Birds. By R. Bowdler Sharpe, LL.D., F.L.S., &c. Part II. Folio. London: H. Sotheran & Co., 1893.]

We are glad to see that Dr. Sharpe's 'Monograph of the Paradise-Birds' is making progress. Part II. with ten beautiful plates is now before us.

The following species are figured in it:—

Ptilorhis paradisea.
Craspedophora intercedens.
Astrapia nigra.
Paradigalla carunculata.
Paradisornis rudolphi.
Rhipidornis gulielmi-tertii.
Manucodia chalybeata.
Lycocorax obiensis.
Amblyornis inornata.
Æluræedus stonii.

Of these *Paradisornis rudolphi* is, as truly said by Dr. Sharpe, "among all the extraordinary birds that inhabit the earth, one of the most striking." Some of the plates will be recognized as old friends.

84. *Sharpe's 'Index' to Gould's Bird-Books.*

[An Analytical Index to the Works of the late John Gould, F.R.S. By R. Bowdler Sharpe, LL.D., F.L.S., F.Z.S., &c. With a biographical memoir and portrait. 4to. London: Henry Sotheran & Co., 1893.]

Indexes are quite in fashion now-a-days, and they are unquestionably of the greatest use to the literary "working-man" of every description. When a job is to be done it is always assigned to the most hard-worked individual to do it. It therefore naturally became the duty of Dr. Bowdler Sharpe to make an index to Gould's works; and here it is, with a portrait and biographical memoir of the great "Bird-man" to set it off. This is followed by a complete list of Gould's published works, which has been copied by per-

mission (with a few additions and corrections) from C
Salvadori's excellent memoir of Gould (Att. Acc. Sc. T
xxi. p. 1). The list shows that Gould's publications
altogether 320 in number, whereof 18 are illustrated
works and the remainder 'opuscula.' The 'Anal
Index' of names and references, which forms the mai
of the volume, fills 376 quarto pages, and is stated to co
nearly 17,000 references, which have been checked by
author with the aid of "his faithful attendant, Mr. Ch
Chubb." We can easily understand, therefore, that the la
involved in its production has been of no small amount.
fact, the author tells us it has taken as many years to f
as he expected it would have taken months.

85. *Stolzmann on the Ornithology of Transcaspia.*

[Contribution à l'Ornithologie de la Transcaspie, d'après reche
faites par M. Thomas Bary (1888-1891). Par Jean Stolzmann.
Soc. Imp. Nat. Moscou, 1892, p. 382.]

M. Thomas Bary, a correspondent of the Bra
Museum at Warsaw, went to Transcaspia on a collec
expedition in 1889, and visited Askabad, Merv, Saraks,
other localities along the Persian and Afghan front
The list of the birds obtained at Askabad has been alr
published (Mém. Soc. Zool. France, 1890, p. 88). A c
plete account of the results of M. Bary's expedition
regards birds is now given by M. Stolzmann. There
230 species represented in the collection, of which 17
new to the avifauna of Transcaspia. *Podoces panderi*
obtained in many localities. M. Stolzmann is incline
unite *Sitta rupicola*, Blanford, to *S. syriaca*, and shows
variable this species is, even in the same district.
name of "*Phasianus principalis*," of which a fine serie
19 examples was obtained by M. Bary on the Afg
frontier, is attributed to "Condie Stephen"! It was, h
ever, invented by the Editor of this Journal, though ba
on specimens transmitted by Mr. Condie Stephen to
Prince of Wales. See P. Z. S. 1885, p. 324.

86. *Wilson and Evans's 'Aves Hawaiienses.'*

[Aves Hawaiienses: the Birds of the Sandwich Islands. By Scott B. Wilson, F.Z.S., assisted by A. H. Evans, M.A., F.Z.S. Part IV., January 1893.* 4to. London: R. H. Porter.]

We are much pleased to welcome the fourth part of the 'Aves Hawaiienses,' and trust that the fifth and concluding part will quickly follow. Messrs. Wilson and Evans cannot expect to render their account of the birds of this highly interesting "Subregion" perfect, as we know that the fertile avifauna of the Sandwich Islands is by no means yet exhausted. But they will at all events have established a solid base for future workers, and have given us, in an excellently illustrated volume, sufficient materials to form accurate views as to the general character of the Hawaiian Avifauna.

The following species are figured in this part:—

Corvus tropicus, Chloridops kona, Ciridops anna, Himatione mana, Bernicla sandvicensis, Anas wyvilliana, Gallinula sandvicensis, Oceanodroma cryptoleucura, Puffinus cuneatus.

XLII.—*Letters, Extracts, Notices, &c.*

The following letters, addressed to the Editor, have been received:—

Sir,—I wish, with your kind permission, to record in your next issue the recent occurrence of a very rare visitor in this country, namely the Bohemian Waxwing (*Ampelis garrula*), a fine specimen of which was shot near Ballinderry, Co. Antrim, on 22nd February last. The bird has occurred in this locality before (*vide* Thompson, Watters, and others), but I have met with no *recent* record whatever of its appearance.

Croft House, Holywood,
Co. Down, 7th March, 1893.

Yours &c.,
R. Lloyd Patterson.

Sir,—The method of snaring Birds of Paradise in the interior of the Port Moresby district has been correctly described by Mr. Thomson, as cited in the last number of 'The Ibis' (above, p. 274). The "dancing-tree" there

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* For notice of Part III. see Ibis, 1892, p. 575.

mentioned corresponds with the "spel-tree" of the Cap
caillie, and such trees are well known to the native bi
catchers of New Guinea. They are frequented by the ma
during the pairing-season, in order to attract the hens
showing off their gorgeous plumage in numerous eleg
motions towards one another, as described by Mr. Thoms
(*l. c.*). These "plays of love" have also been described
the Rev. James Chalmers in his interesting 'Work a
Adventures in New Guinea, 1877 to 1885'*. As rega
the mode of catching Birds of Paradise we find (*op. c*
p. 246) the following notes:—"The inland natives kill th
with arrows; sometimes they catch them with gum smear
over the branches of the tree. The natives know th
favourite resorts, and many are thus snared."

When in New Guinea I became acquainted only with t
latter method of capture, which is used also by the nativ
of Milne Bay, and to prevent error it is worth while
mention that the inland natives *do not shoot* Birds
Paradise with arrows. These weapons or hunting impl
ments have only a very limited use in New Guinea. Bow
and arrows are unknown to the natives inland of Po
Moresby, and to the tribes on the Astrolabe and Owe
Stanley Mountains. The drawing in Chalmers's work (*o*
cit. p. 246), "Shooting Birds of Paradise," which shows
native hidden under a shelter of leaves on a tree aiming a
these birds, is therefore quite misleading, and does no
refer to New Guinea, but to the Aroo Islands. As ha
already been mentioned by me†, this illustration is merely
book-maker's invention, having been copied from Wallace'
'Travels' (frontispiece to vol. ii. p. 364, German edition)
The birds there figured are also clearly of the Aroo-Islan
species—*Paradisea apoda*, and not *P. raggiana*, which i
peculiar to the south-eastern portion of New Guinea.

Delmenhorst (near Bremen),
March 1893.

Yours &c.,
Dr. Otto Finsch.

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[*] London, 1885.

[†] Annalen d. k.-k. naturhistorischen Hofmuseums, Bd. iii. Heft
p. 334 (120) (1888) (note).

Sir,—I dare say the following fact will interest you. Mr. Hudson, in the 'Argentine Ornithology' (vol. ii. p. 115), says he believes there are *two* species of Roseate Spoonbills: one, the typical *Ajaja rosea*, with bare head, excrescences on the beak, yellow tail, crimson wing-marks, and breast-tuft; and a second one with feathered head, pale-coloured plumage, smooth bill, rose-coloured tail, and no breast-tuft.

Mr. Hudson's opinion was that the true *A. rosea* has all its characteristic marks &c. from its youth up, and that the pale-coloured birds do not undergo any change.

I can now prove that these pale-coloured birds are *not* a distinct species, but are simply immature specimens of the bright-coloured *Ajaja rosea*.

In June 1889 the Zoological Garden of Amsterdam acquired two Spoonbills answering exactly the description that Mr. Hudson gives of his pale-coloured species, as he calls it.

I have observed these birds ever since their arrival; they did not vary much until March of the present year (1893), when both birds completely changed their plumage into that of typical *A. rosea*. The heads have become bare, the excrescences on the beak have appeared, the tails are yellow, and the bright wing-spots and the breast-tuft are also present.

The fact that these birds have kept their immature plumage for four years sufficiently explains why on the pampas bright-coloured mature birds are comparatively rare. The immature bird Mr. Hudson shot must have been, not a bird just out of the nest, but a bird just acquiring the characters of the adult. This would explain the excrescences on the bill being soft.

The pale-coloured bird of Mr. Hudson's friend, which did not change for seven years, was probably not kept under favourable circumstances as to its food. This may have hindered its acquiring the fully adult plumage.

So, for instance, I have observed that specimens of *Tantalus ibis* fed on meat instead of fish never acquire their bright red wing-feathers. Perhaps also the number of years the bird was kept had not been accurately noted.

There remains still the different structure of the trach
but I do not see why that should not also acquire its
form only when the bird is fully adult.

I am,
Yours &c.,
F. E. Blaau

'8 Graveland, Hilversum,
Holland, April 1893.

Sir,—In some "Oological Notes" by Mr. Alfred No
(Proc. Linn. Soc. N. S. W. (2) vii. pp. 393–398, 1892), t
author makes remarks on the eggs of *Cyanorhamphus rayne*
Gr., from Norfolk Island, and, after having alluded to m
identification of this bird with *C. cooki* (Cat. B. Brit. M
xx. p. 585; see also Ann. & Mag. Nat. Hist. (6) vii. p. 6
comes to the following conclusion:—"If *C. rayneri*
Norfolk Island is the same as *C. cooki* of New Zealand,
stated by Count Salvadori, I should not be surprised to fin
upon the examination of a large series of skins of the Re
fronted Parrakeet of Norfolk Island, that it is only
occasional, and by no means constant, variety of *C. nov*
zealandiæ, not meriting even subspecific distinction."

Mr. North, who does not seem to have ever seen a *Cyano*
rhamphus from Norfolk Island, is mistaken as regards
admitting that the type of *C. cooki* ever came from Ne
Zealand. In fact, as the "habitat" of this species (*op. ci*
p. 585) I have given "Norfolk Island" only. The locali
"New Zealand" to specimen *a* (the type of *Platycerc*
cooki) is included between square brackets, which mea
that, according to my belief, it is wrong. In fact, the allege
locality is not supported by any reliable authority, the spec
men having belonged to the old "Bullock Collection." I
conclusion I may say that I am quite persuaded that the typ
of *C. cooki* (like the type of *C. rayneri*) is a specimen from
Norfolk Island, which has been wrongly labelled "Ne
Zealand," and that *C. cooki* is a perfectly distinct speci
quite different from *C. novæ-zealandiæ*.

If the Australian and New-Zealandian naturalists will tak
the trouble to bring together specimens of the genus *Cyan*

rhamphus from the different islands, they will find that they belong to insular forms perfectly distinct from one another.

I take this opportunity also to answer some remarks on the *Cyanorhamphus* from Antipodes Island, made by Mr. H. O. Forbes in the last number of 'The Ibis' (p. 280). Whether this bird, which no doubt is *C. hochstetteri*, Reischek, is different, as I am inclined to believe, or not from *C. erythrotis* from the Macquarie Islands, is a question which must be left *sub judice* till we have a good series of specimens from both localities to be compared together. Till then I think it safer to consider the Antipodes-Island bird distinct, more especially as, besides some slight differences, *C. hochstetteri* and *C. erythrotis* have different habitats, a fact which warns us to be very cautious before we identify birds from different islands. In this particular case caution is the more necessary because the only available specimen from Antipodes Island (brought home by Mr. H. O. Forbes, and now in the British Museum) is imperfect and without a tail.

I am, Sir,
Yours &c.,
T. Salvadori.

Zoological Museum, Turin,
April 21st, 1893.

Sir,—I should like to correspond with residents in this country who are interested in the subject of the migration of various birds. There are certainly many routes taken, but the greater part of these routes are indefinable, as the inland being so very uniform in character, the migrants, as a rule, travel direct, instead of following rivers or valleys. Why some birds, such as *Alectrurus risorius*, *Tænioptera dominicana*, and *Myiotheretes rufiventris*, should only be found migrating due south-east and north-west, and breeding (except the last) 150 miles south and 100 miles west of Buenos Aires, and never appearing nearer to the capital, except as stragglers *en route*, is very puzzling. *Agelæus flavus* is also only found, though resident, beyond this same limit. In fact, one could draw a line beyond which certain species are never found, so that their occurrence would tell the traveller in which part of the country he was *not*, without other guides.

List of the commonest Migrants at Estancia Sta. Elena.

NAME	FROM	TO	DIRECTION.	ROUTE.
Progne chalybea	Argentina	Brazil	S. to N.	No special route.
Parula pitiayumi	Buenos Aires (town)	Brazil	S. to N.	Along river-banks.
Tringa maculata	Argentina	North America	S. to N.	No special route?
Aegialitis falklandica	Patagonia	Argentina	S. to N.	No special route.
Tanagra bonariensis	Brazil	Buenos Aires (town)	N. to S.	Along river Paraná.
Myiotheretes rufiventris	Patagonia	Argentina (except within 100 miles radius of Buenos Aires, town).	S. to N. & N.W.	No special route?
Alectrurus risorius	S. & S.E. Argentina	Brazil and Paraguay, not passing near Buenos Aires (town).	S.E. to N. & N.W.	Probably by open ground.
Columba picazuro	Western Argentina	A radius of 100 miles round Buenos Aires (town).	W. to E.	No special route.

I find that the localities mentioned in 'Argentine Ornithology' are often very misleading, such as, for example, "Buenos Aires." If this means the province, it is far too broad; if the town, it should be so stated, and also whether the species is a "straggler," a "regular visitor," or a "resident." For example, *Agelæus flavus, Alectrurus risorius,* and a great many other species are absolutely unknown close to the town of Buenos Aires, but common in the west of the province of the same name. Again, there are birds that pass by the river to the neighbourhood of Buenos Aires (town), such as *Tanagra bonariensis,* which are only known there, and never seen further south.

I give (see p. 468) a short list of a few of the commonest migrants which pass in March and April, according to my observations, and their resorts, so far as I can ascertain them from 'Argentine Ornithology.'

In the stream of migrants which arrived here on March 5th last, passing northwards, were some four hundred individuals of the following species, which also all departed together:—*Mimus triurus, Troglodytes furvus, Poospiza torquata, Catamenia analis, Tænioptera coronata, Lichenops perspicillatus, Elainea albiceps, Pyrocephalus rubineus, Myiarchus ferox, Tyrannus melancholicus, Milvulus tyrannus, Phytotoma rutila, Synallaxis albescens, S. hudsoni,* and *Coccyzus melanocoryphus.*

I am, Sir,
Yours &c.,
A. H. Holland.

Estancia Sta. Elena, Media Luna,
Soler-F. C. al Pacifico,
Argentine Republic, March 25th, 1893.

Sir,—Among some bird-skins obtained several years ago from Formosa, which I have not hitherto been able to examine carefully, I find a Bulbul which appears to be undescribed. In its olive-yellow wings and tail it much resembles *Pycnonotus sinensis* and *P. hainanus,* but differs from them in its greyer back and in the absence of yellow streaks both on back and lower parts. Its head, with plain black cap, black moustache, and scarlet spot at the gape, is very like that of *P. xanthorrhous* but for the light ear-coverts. There is only a single example, undated and unsexed, which may be described as follows:—

PYCNONOTUS TAIVANUS, sp. nov.

Crown of head and nape black; lores and ear-coverts silvery buffish white; throat white; moustache black, with a small red spot at the base of the lower mandible. Hind neck light earthy brown; back, scapulars, lesser wing-coverts, and rump dull ashy brown, very lightly washed with olive. Greater coverts, remiges, and rectrices dark brown, washed externally with bright olive-yellow. Under surface buffish white, washed on flanks and thighs with ashy brown; under tail-coverts edged with olive. Bill black. Legs and feet deep brown (in skin). Length apparently 7¾ inches, wing 3·4, tail 3·3.

Two years ago my collector shot for me near Ichang three specimens of a *Dicæum* (♂ ♂ ♀) in which the upper parts of the male are of so much a deeper blue than in my specimens of *D. ignipectus* from South China that it would appear to be worthy of specific rank. The females I am unable to distinguish. I propose to name this species

DICÆUM CYANONOTUM, sp. nov.

Similar to *D. ignipectus*, but with the upper surface deep steel-blue instead of steel-green; the lesser wing-coverts and rump are greenish. The pale olive edgings to the feathers of back and rump in *D. ignipectus* are wanting, also the olive edgings to the secondaries. The chest-spot is more orange, less crimson.

I am, Sir,
Yours &c.,
F. W. STYAN.

Kiukiang,
April 29th, 1893.

The Crocodile and its Bird.—The 'Saturday Review' of May 6th last contains an article on Crocodile-birds, based on Mr. J. M. Cook's letter in our last number (above, p. 275). In reference to the Editorial remark that the story in question "had not been confirmed by eye-witness since the days of Herodotus," the Saturday Reviewer writes as follows:—"No doubt, until Mr. Cook made his observation, the story had not 'been confirmed by recent observations'; but Giovanni Leone, perhaps better known as Leo Africanus, an author and traveller, who lived and wrote in the latter part of the fifteenth and the early part of the sixteenth century—*i. e.* at least 1300 years after Ælian—and whose accounts of what he saw are singularly devoid of fable, tells the story in a manner which makes it hard to believe that he was not relating facts which actually came under his own observation. He tells us—we quote from the French translation of his 'Description of Africa,' published in 1556—that he was on the Nile, 'distant de Caire environ quatre cens mille,' when he saw several crocodiles upon some little islands in the middle of the river, 'qui estoyent étendus au Soleil, les gueules bées; dans lesquelles aucuns oysillons de blanc panage, & grandeur d'une grive, entroyent dedãs, là ou ayans sejourné quelque espace de temps s'en retournoyent, dressans leur vol ailleurs. Dont estãt curieus d'entendre la raison de cela, je m'en enquis, & me fut dit, qu' entre les dens du crocodile demeurent quelques filés de chair, ou poisson pendans; lesquels venans à se putrifier, se convertissent en vers, qui les molestent aucunement, & estans aperceus remuer par ces petits oyseaus volãs, viennent à entrer dans la gueule pour les mãger, ce que ayans fait, crocodile ingrat tâche à les engloutir, mais se sentant piqúe au palais d'une dure & peignante épine (que l'oyseau a sur le sommet de la tête) il est cotraint de desserrer, donnant lieu à la fuitte de l'oyseau, & avenãt q̃ j'en puisse recouvrer un, je raconteray cette histoire plus surement, & à la verité." Again, Paul Lucas, who wrote in 1719, though by no means an exact author or worthy to be too implicitly believed, distinctly says that he saw close to his boat some birds 'like a Lapwing, and near it in bigness,' which went 'into the crocodiles' mouths or throats, ... and after they had stayed a little while the crocodiles shut their mouths, and opened them again soon after to let them go out.' He was told by the people that the birds in question 'feed themselves on what remains between this animal's teeth by picking them, and as they have a kind of spur or very sharp thorn in the tops of their wings, they prick the crocodile, and torment him when he has shut his mouth, till he opens it again, and lets them out; and thus they secure themselves from the danger they were in." And he adds the suggestion that "likely these are the birds which Pliny calls Trochilos."

Anniversary Meeting of the British Ornithologists' Union, 1893.—The Annual General Meeting of the British Ornithologists' Union was held at the rooms of the Zoological Society of London, 3 Hanover Square, on Wednesday, the 3rd of May, at 6 P.M. In the absence of The President, Mr. PHILIP LUTLEY SCLATER, M.A., Ph.D., F.R.S., was in the Chair. The Minutes of the last Annual Meeting having been read and confirmed, the Report of the Committee was read. It stated that two Ordinary Members (Col. J. Biddulph and Mr. A. I. Muntz) had withdrawn, and two (Mr. W. Davison and Mr. G. M. Slaughter) had died since the last Anniversary.

The number of the Members of the Union at the close of 1892 was 261, consisting of 231 Ordinary, 1 Extra-ordinary, 9 Honorary, and 20 Foreign Members. There were 18 Candidates for the Ordinary Membership, and 1 for the Honorary Membership, now to be balloted for.

The accounts for the year 1891 were then presented by the Secretary, and approved by the Meeting.

The following Ordinary Members were balloted for and declared to be duly elected:—

Major Ernest L. S. Anne, Blenkinsopp Castle, Greenhead, Carlisle.
Ernest W. H. Blagg, Greenhill, Cheadle, Staffordshire.
George Bolam, F.Z.S., Castlegate, Berwick-on-Tweed.
W. E. de Winton, Graftonbury, Hereford; and 38 Great Russell Street, W.C.
Ernst Hartert, The Museum, Tring, Herts.
William Hartmann, Tangley Mere, Chilworth, Surrey.
Charles Hose, F.Z.S., Baram, Sarawak, Borneo.

William Henry Hudson, C.M.Z.S., Tower House, St. Luke's Road, Westbourne Park, W.

Frederick Lewis, Assistant Conservator of Forests, Ratnapura, Ceylon.

William H. Mullens, M.A., F.Z.S., Westfield Place, near Battle, Sussex.

Thomas Digby Pigott, C.B., 5 Ovington Gardens, S.W.

W. P. Pycraft, University Museum, Oxford.

Percy Rendall, M.D., F.Z.S., Eureka City, South African Republic.

The Hon. L. Walter Rothschild, F.Z.S., Tring Park, Tring, Herts.

Samuel S. Stanley, 3 Regent Grove, Leamington, Warwickshire.

Charles Stonham, F.R.C.S., F.Z.S., 4 Harley Street, Cavendish Square, W.

Dixon L. Thorpe, 41 Aglionby Street, Carlisle.

Aubyn B. R. Trevor-Battye, F.Z.S., St. Margaret's Mansions, 51 Victoria Street, S.W.

Dr. Anton Reichenow, C.M.Z.S., of Berlin, was also balloted for and elected an Honorary Member.

The outgoing President and Secretary were then re-elected, and Mr. Howard Saunders was chosen into the Committee in the place of Dr. R. Bowdler Sharpe, who retired by rotation.

The Officers for the year 1893–94 are therefore as follows:—

President.

THE RIGHT HON. LORD LILFORD.

Secretary.

F. D. GODMAN, ESQ., F.R.S.

Editor.

P. L. SCLATER, ESQ., M.A., Ph.D., F.R.S.

Committee.

HENRY SEEBOHM, ESQ.
OSBERT SALVIN, ESQ., M.A., F.R.S.
HOWARD SAUNDERS, ESQ.

After a vote of thanks to the Chairman, the Meeting adjourned.

The Annual Dinner, subsequently held at Limmer's Hotel, was attended by 32 Members and guests.

Parus colletti, STEJNEGER.—In his 'Mindre Meddelelser vedrörende Norges Fuglefauna i Aarene 1881–1892' (now being printed), of which a set of the sheets has been forwarded to us, Prof. Collett makes (pp. 34, 35) the following remarks (which have been kindly translated for us by Mr. A. Heneage Cocks) on "*Parus colletti*," a "species" instituted by Dr. Stejneger in 1888, as being the representative of *Parus borealis* in Western Scandinavia:—

"In the Proc. U.S. Nat. Mus. 1888, p. 71, Dr. Stejneger has sought to maintain that *Parus borealis* makes its appearance in Scandinavia in two forms—a western form, which is stated in the main to inhabit Norway, and the typical form, which is more eastern and inhabits generally Sweden.

"The western form, of which Dr. Stejneger had a pair of examples before him, shot near Bergen in June and August 1887, differs, he says, from the eastern, of which he has six examples, shot in the winter months in Sweden, chiefly in the colour of the hood and of the edge of the secondaries, a difference which he considers as constant, and so important that he sets up the western form as a peculiar species under the name of *P. colletti*, by the side of the typical (eastern) *P. borealis*.

"The diagnosis of the two species is given as follows (p. 74):—

	Parus colletti.	*Parus borealis.*
Top of head and nape	pure black, without gloss.	brownish black*.
Back	smoke-grey.	pale buffy grey.
Outer margins of secondaries	like the back, scarcely lighter.	whitish.
Under tail-coverts	smoke-grey, like the back.	whitish.

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* [In the original diagnosis the colour of the hood in the two forms is exchanged, which is obviously a misprint. Thus it is found (at the foot of p. 74) stated :—

"In the Norwegian birds (*P. colletti*) the top of the head is deep black against brownish black in those from Sweden."

Professor Collett has himself let slip an obvious misprint in copying the English diagnosis, "hand" being printed instead of "head."—A. H. C.]

"In endeavouring to decide the question about these two forms, I have examined the greater part of the material of *P. borealis* which is at the present time preserved in the different museums of the country. The University Museum* possesses in all 39 examples, of which 26 are from the most southerly parts of Norway (the districts about Christiania, Drammen, Hamar, and Dovre), 3 from the west coast of the country (Söndfjord, in Bergen diocese), 2 from Finmarken (Alten, Varanger), besides 8 from Mid-Sweden (Upsala).

"Among all these examples, which come from the most easterly, the most northerly, the most westerly, and the most southerly portions of Scandinavia, I have not been able to detect the slightest *constant* difference.

"The greyish-white margins of the secondaries may, it is true, vary somewhat in breadth and in purity of colour, just as the sides of the belly may be in some individuals more reddish grey, in others (at the same time of year and locality) of a purer white. Examples obtained in summer have, as a rule, whiter abdomens, but somewhat narrower (more worn) edges to the webs of the secondaries, than winter-killed specimens. In the young in nestling-plumage (Bosekop in Alten, July 22, 1880; Hamar, July 4, 1889; Gausdal, July 24, 1889; Jönsæt, July 17, 1890) these edges are brownish grey, and not whitish grey, and these examples come perhaps nearest the two examples of his *P. colletti* described by Dr. Stejneger†. But any constant difference between the individuals from these widely separated parts of the country does not exist.

"*P. colletti* must therefore, according to my judgment, be considered as founded on individual variations of *P. borealis*, which may make their appearance anywhere amongst the normal individuals."

Bailly's 'Ornithologie de la Savoie.'—It should be remembered that Bailly, in his 'Ornithologie de la Savoie' (Paris, 1853–55), has given to a few well-known species new names, which have not been referred to in the 'Catalogue of Birds in the British Museum.' As it may happen that some ornithologists, not finding these terms in this standard work, may think themselves at liberty to use them for other species, I think it advisable to point them out to the readers of 'The Ibis.' They are as follows:—

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* Christiania.

† Which, however, are expressly stated to have been old individuals, not young ones.

Aquila fluvialis, Bailly, Orn. de la Savoie, i. p. 104 (1853) (=*Pandion haliaëtus*).

Hirundo sociabilis, Bailly, op. cit. i. p. 268 (=*Chelidon urbica*).

Lanius ruficapillus, Bailly, op. cit. ii. p. 32 (=*L. auriculatus*).

Garrulus glandivorus, Bailly, op. cit. ii. p. 118 (=*G. glandarius*).—T. Salvadori.

Tristram's Grakle in Captivity.—Lord Lilford early in January last added to his living collection an example of Tristram's Grakle (*Amydrus tristrami*), figured in Gould's 'Birds of Asia,' vol. v. pl. 45, the Palestine species of this interesting group, which was discovered by Canon Tristram in the Gorge of the Kedron in 1858, but which had not previously been seen in captivity. This bird is still alive and well, and in general habits, Lord Lilford tells us, resembles the Mynahs very closely, except that it will not bathe. It exceedingly enjoys being "sprayed" with water. Lord Lilford hopes to receive more of these birds from his correspondent in Palestine during the summer.

This bird is evidently a female; her note is a frequently-repeated, monotonous, and somewhat harsh cry, with a certain indication of powerful vocal organs.

Great Bustards in the Zoological Society's Gardens.—The hen of the pair of Great Bustards (*Otis tarda*) which have been for some time in the Zoological Society's Gardens has made a nest and commenced sitting on two eggs, this being, so far as is known, the first instance of the Great Bustard, which is notoriously a shy bird, breeding in captivity. The cock appears to take no part in the duties of incubation.—P. L. S., *June 13th*, 1893.

Ornithologists on their Travels.—We are pleased to be able to announce that arrangements have been made for Mr. R. Lydekker to visit the museums of the Argentine Republic this autumn, in order to examine the extraordinary series of fossil bird-bones which have lately been discovered there. In the preface to 'The Ibis' for 1892 we expressed a hope that it would be found possible to obtain the judgment of an experienced palæontologist upon these specimens. No one in England is more qualified for the purpose than the author of the recently-published 'Catalogue of Fossil Birds in the British Museum,' and the Royal Society have done right well in granting the necessary expenditure on this object from their Donation Fund.

Mr. O. V. Aplin's return from his expedition to Uruguay is expected immediately. We hope to be able to give some account of his results in our next number.

As will be seen by the letter amongst our correspondence, Mr. A. H. Holland has not forgotten the birds in his new residence at Estancia Sta. Elena. We have just received from him a collection of skins, with accompanying field-notes, which will be published in our next number.

Mr. F. Withington, whose change of quarters we have already noted (above, p. 284), has now settled at Rancho Salisipuedes, near Tuxpan, in Mexico, and hopes to be able to commence a collection of birds very shortly.

Mr. Charles Hose, with whose successful ornithological explorations in Northern Borneo all readers of 'The Ibis' are well acquainted, is now returning to his residency at Claude Town, on the Baram River, where he will not fail to continue the researches which have already made his name famous in the ranks of ornithological collectors and observ Mount Dulit is by no means yet exhausted, and Mou Kalulong and Tamuduk still afford an ample field Mr. Hose's exertions. Borneo is by no means worked ou

Mr. John Whitehead, we understand, is contemplating new expedition to the East, and will start shortly; fi probably, for some of the less-known islands of the Philipp group, after which he will investigate certain portions of Papuan Subregion, of which we at present know too lit Mr. Whitehead's great experience and previous success ren it certain that he will employ his time well.

Dr. Percy Rendall has arrived at his new quarters, Eur City, near Barberton, in the Transvaal. Birds he finds present "very scarce," as they are "all moulting," so h devoting himself to other natural objects for the present.

Obituary.—M. OLPHE-GALLIARD and Mr. W. R. DAVIS

VICTOR AIMÉ LÉON OLPHE-GALLIARD, a French ornitholo devoted to the study of the birds of his native country, d at Hendaye, Basses Pyrénées, on the 2nd of February last, the age of 68 years. M. Olphe-Galliard is principally kno as the author of an illustrated octavo work, entitled 'Con butions à la Faune Ornithologique de l'Europe occidenta which was issued at Bordeaux in 40 fasciculi from 1884 1892. He also published in 1891 a 'Catalogue des Oisea des environs de Lyon,' and was the first describer of charming little Algerian bird, Moussier's Redstart (*Ratici moussieri*), from specimens obtained in the province of Or by M. Moussier in 1846 (Ann. Sci. Phys. et Nat. de Ly sér. 2, iv. p. 101).

WILLIAM RUXTON DAVISON, F.Z.S., Curator of the Raff Museum, Singapore, whose death took place at Singapore the 25th of January last, belonged to a good family in north of England. His father, having married a lady somewhat inferior position, enlisted and went out to In with his wife. Being a clever fellow, he was quickly taken out of the ranks, and rose to be an executive engineer in the Public Works Department in Burmah, where Davison himself and his sister (afterwards Mrs. Davidson) were born. After the father's early death, Davison's mother, a good, sensible, hard-working woman, settled at Ootacamund, in India, and, with the assistance of friends, started a boarding-house. Here Davison got a good education in "Pope's Academy," and at the age of sixteen was apprenticed to the analytical chemist employed in the Nilgiri Cinchona plantations. Some years later Dr. King, the Superintendent of the Botanical Gardens, Calcutta, on visiting the Cinchona plantations, discovered Davison's merits as an intelligent observer of animal-life, and recommended him to Mr. A. O. Hume, C.B. Mr. Hume engaged Davison as his collector, and, after a year's preparatory training at Simla, sent him every year for six or seven months to various parts of India to collect birds. Each year he returned with the results of his labours, which were carefully gone over by Mr. Hume, who by systematic cross-examination extracted from Davison all he had learnt and seen, for although Davison was a close observer and had a capital memory, he had not the gift of expressing himself very clearly, either on paper or in conversation. The excellent results obtained by these periodical excursions and collections are well known to ornithologists from various papers in 'Stray Feathers,' and from the splendid additions thus made to the great "Hume" collection of birds.

In 1883 Davison came to England for the only time in his life, and then returned to Ootacamund, whence he wrote to the Editor of this Journal in January 1886 (see 'Ibis,' 1886, p. 203). Shortly afterwards he married an English lady, and later on (at the end of 1887) accepted the post of Curator of the Raffles Museum, Singapore, which he continued to occupy until the time of his death. During this period, though often in weak health, he was in frequent communication with the Zoological Society of London, and

was of much service to them in superintending the pa
and transmission from Singapore to England, in the au
of 1889, of the only example of the Gaur (*Bos ga*
that has ever reached Europe alive.

Mr. Hume, to whom we are indebted for most of
particulars of Davison's life, speaks of him as having b
thorough gentleman, most upright and steady in all ma
of business, but always rather delicate in health. His t
ing as an analytical chemist had given him a nicety
delicacy of touch such as few men, and not many wo
can boast of. The "make" of his bird-skins was excel
as most ornithologists know. He was an accomplished
guist, and could speak Hindustani, Tamil, Burmese, and M
fluently. Davison was always kind to the natives and man
them thoroughly well; the native shikaris and skinners
were sent with him by Mr. Hume usually became n
attached to him and served him faithfully. In Daviso
have lost before his time one of the most active and succe
bird-collectors of the epoch.

So far as we know, Davison's published articles were
five in number, namely :—

(1) A Revised List of the Birds of Tenasserim. By A
Hume and W. Davison. Stray Feathers, vi. p. 1 (18

(2) Letter from, containing descriptions of *Trochalopte*
cinnamomeum and *Merula erythrotis*. Ibis, 1886, p.

(3) Notes on some Birds collected on the Nilghiris an
parts of Wynaad and Southern Mysore. Stray Feath
x. p. 329 (1887).

(4) Letter on the Birds of Travancore. Ibis, 1888, p. 1

(5) Descriptions of some new Species of Birds from
Eastern Coast of the Malayan Peninsula. Ibis, 18
p. 99.

A good portrait of Davison will be found in the th
volume of Oates's edition of Hume's 'Nests and Eggs
Indian Birds,' published in 1890.

THE IBIS.

SIXTH SERIES.

No. XX. OCTOBER 1893.

XLIII.—*On the Egg of the Empress Augusta-Victoria's Paradise-bird.* By Dr. A. B. Meyer.

(Plate XIII.)

Though Birds of Paradise have been known for centuries, and though we are now acquainted with more than fifty species of this most interesting family, we are almost completely ignorant of everything concerning their nests and eggs. It is, so far as I am aware, only ten years ago that the first egg of a Paradise-bird (*s. s.*) was described by Mr. E. P. Ramsay in the 'Proceedings of the Linnean Society of New South Wales' (vol. viii. p. 26, 1883), viz. that of *Paradisea raggiana.* To this I was able to add a year later the description and figure of the egg of *P. apoda*, from Aru (Zeitschr f. ges. Orn. 1883, p. 293, pl. xvii. fig. 2), though I was not quite sure then that the broken egg in my possession really belonged to a Paradise-bird. That this, however, was the case is proved by the two eggs which I now have the privilege of describing and figuring as certainly belonging to *Paradisea augustæ-victoriæ* *.

The general superficial impression made by these eggs calls to mind the eggs of certain Rails,—some specimens of the eggs of *Crex pratensis*, for instance, having a similar appearance. The shell is coarse, with fine indentations and single deep pores, as in *Coracias*; it is everywhere polished and glossy, except a few of the paler and smaller spots, which are dull and glossless. The ground-colour is pale pinkish-buff (*cf.* Ridgway, Nomencl. of Col. v. 14, but lighter), longitudinally streaked and spotted over the greater part of the large end. The darker streaks are remarkable for their length (10–15 mm. long, 2–4 mm. broad, or even narrower); the deeper-lying spots are rosy grey, the darker longitudinal streaks mostly reddish brown (walnut-brown, Ridgway, pl. iii. 7), but mixed with lighter and darker tints. There are several very dark spots, others are smaller and of a glossless brownish yellow; others, again, of this same colour are glossy. The small end of the egg has few spots; the pole of the large end is almost clear of spots.

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* [This species was first described by Dr. Cabanis, J. f. O. 1888, p. 119, and is figured op. cit. 1889, pl. ii.—Ed.]

The form is ovate (Ridgway, xvi. 1), but more lengthened; the size 38 × 25·5 and 36·5 × 25 mm., and the weight 0·7 gr.

The egg of *P. apoda* is darker, with spots of the same colour, but with much broader and more isolated streaks and dashes, and the space round the pole of the large end somewhat spotted.

The egg of *P. raggiana*, as described by Ramsay (*l. s. c.*), appears to be of a similar character.

The two eggs described and figured (Plate XIII.), each from two sides and from above, were taken by the brothers Geisler, in the month of August 1890, near the village of Jakema on the Saddle Mountain ("Sattelberg"), Huon Gulf, East New Guinea, at about 250–300 ms. above the sea-level. A native having told them that he had discovered the nest of a Paradise-bird, they proceeded to the spot, but found the tree too high and big to climb it themselves. The native, however, ascended it and brought down two eggs, unfortunately leaving the nest torn to pieces between the twigs. Several females fluttered and cried around while the native was thus employed, a male having been shot just before on a neighbouring tree.

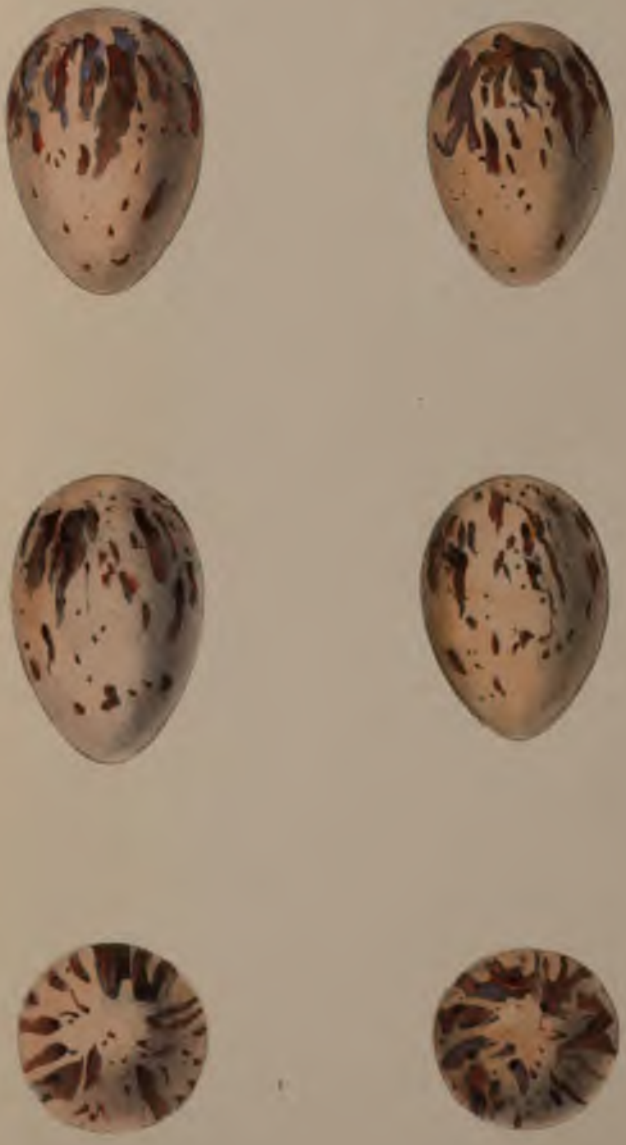
The breeding-season of *P. augustæ-victoriæ* begins in July,

J. Smit del. et lith.

Mintern Bros. imp.

EGGS OF PARADISEA AUGUSTÆ-VICTORIÆ

Ibis. 1893. Pl. XIII.



J. Smit del. et lith.

Mintern Bros. imp.

EGGS OF PARADISEA AUGUSTÆ-VICTORIÆ.

when the males, in companies of from three to six, hold their dancing-parties on the high trees. Females on the wing bearing nesting-materials were often seen, but for a long time no nest could be discovered. The males were also observed with like materials in their bills, though they generally dropped them again. At the end of October a young bird made its appearance on the mountains behind Butaueng on Huon Gulf. At this time of the year the rainy season (S.E. monsoon) generally ceases, and the dry N.W. monsoon then prevails till the beginning of April. The moulting of the Bird of Paradise begins at the end of October; in January the gorgeous new feathers begin to sprout, but it is only in July that the breeding-plumage becomes fully developed in its finest phase. The brothers Geisler once observed this Paradise-bird robbing the nest of *Chalcophaps stephani*; a specimen kept in captivity also sucked other eggs with avidity.

According to the present state of our knowledge, *P. augustæ-victoriæ* has only a narrow range along the borders of Huon Gulf, north of which, in Astrolabe Bay, *P. finschi* occurs, and in South and South-east New Guinea *P. raggiana*, which is represented on the d'Entrecasteaux Islands by *P. decora*. It appears that red and yellow Paradise-birds do not occur together, but represent each other. According to the Geislers, *P. augustæ-victoriæ* never changes its hunting-ground.

XLIV.—*Field-Notes on the Birds of Estancia Sta. Elena, Argentine Republic.* By A. H. Holland. *With Remarks by* P. L. Sclater.

[Mr. Holland has sent me specimens of all these species for examination. I have verified the names, and have added a few remarks where necessary.—P. L. S.]

1. Mimus triurus (Arg. Orn. i. p. 8).

Rare, arriving here in November. The iris of this specimen was certainly pale greenish, so Mr. Hudson, who calls it

“orange-red” (Arg. Orn. i. p. 8), appears to have b
mistaken, and Azara to have been correct, unless the var
tion be due to sex or age.

2. COTURNICULUS PERUANUS (Arg. Orn. i. p. 60).

Fairly common throughout the year, in winter, livi
during the daytime, in small companies, and at sun
collecting in large numbers to roost amongst the t
herbage. When thus collected together they break i
their feeble twitterings.

In spring-time the flocks break up, and the birds pair
scattering about the quintas and plantations, though a f
resort to the camp. During the breeding-season the pluma
becomes much darker. The male at this season sometim
soars to about 30 feet in height, with head thrown back and t
feathers erected, tail raised and expanded, the wings beati
quickly. During this performance the bird twitters a sh
feeble song, striving after high notes, but failing sadly, as
it possessed a sore throat. In habits this species is shy a
retiring, preferring to run along at a great pace with its bo
crouched down, resembling a mouse, to flying away, wh
disturbed. It perches alike on trees, weeds, buildings, a
elsewhere.

The nest is placed on the ground under a tuft of gra
and is composed of dry grass, slightly lined with horseha
The eggs are three, white, pear-shaped, and rather shiny.

3. CORYPHOSPINGUS CRISTATUS (Arg. Orn. i. p. 48).

Obtained on July 3rd, after a heavy wind. Iris black.

4. POOSPIZA TORQUATA (Arg. Orn. i. p. 51).

Several of these birds arrived in March and departed a f
days ago, evidently on their way north. They frequ
trees and buildings, making short flights after insects fr
the former. In disposition they are tame, but very restl
and mix freely with almost any flock of other Finches, s
as Chingolas and *Sycales*. They utter a faint but pleas
song. Their flight is short and in curves. The belly c
tained a few insects and minute seeds.

[Mr. Holland's specimen, about which he was in doubt certainly a young example of this species, which had not been previously met with in this part of Argentina.—P. L. S.]

5. Catamenia analis (Arg. Orn. i. p. 57).

Rare, arriving in November. Iris hazel. It inhabits the weeds and trees, and is of a very shy disposition. It feeds chiefly on grass-seeds, and in its flight closely resembles *Chrysomitris icterica*, for which, in a bad light, it might be easily mistaken.

[Mr. Holland sends examples of both sexes of this Finch, which is new to this part of Argentina. In the short description in 'Argentine Ornithology' the white wing-spot is not mentioned.—P. L. S.]

6. Leistes superciliaris (Arg. Orn. i. p. 108).

On November the 20th, when I was chasing deer, I came across a specimen of this species with its primaries and secondaries of both wings pure white. It had a very striking appearance with its red breast, black body, and white wings. It was amongst a flock of this species, and in all other respects was similar. I induced the "peones" to try to "bolear" it, but without success, and next day it had disappeared from the spot.

7. Alectrurus risorius (Arg. Orn. i. p. 123).

Plentiful everywhere, arriving in September and departing in February. The males arrive first and the females, along with their last year's young, soon afterwards. These young birds at first closely resemble each other, but the males soon change, first one bare tail-feather for a webbed one, then the other; next the black ring appears on the breast, but the plumage otherwise remains brownish. The old male courts his mate, who perches on a tall weed or grass-stalk, by flying round her in small circles, but keeping on her level, in a perfectly upright position, having his tail and head in the same straight line and the wings fluttering at a great pace, with his breast always facing the female. The male also occasionally takes an upward flight much resembling that of a butterfly, with tail closed and elevated on ascending, but slightly expanded and with the vanes inclined inwards on descending, the body being horizontal. At other times he chases the female for a comparatively long distance, flying fairly fast in a horizontal line with the head and tail stretched out and resembling a thick arrow. In habits the male is rather bold, while the female and young are shy. They are always quietly moving about, flying from one clump of herbage to another, catching insects as they pass. The webbed side of the two tail-feathers is always carried uppermost, the bare side being below.

The nest is cup-shaped, placed on the ground under a tuft of grass, and is composed of dry grass and lined with a few feathers. The eggs are three in number, of a pure pale cream colour; they are blunt and brittle.

8. HAPALOCERCUS FLAVIVENTRIS (Arg. Orn. i. p. 137).

Fairly common in the reeds, where it breeds. It arrives in September, and departs in February. Iris hazel.

9. HABRURA PECTORALIS (Arg. Orn. i. p. 138).

Fairly common, arriving in October and departing in February. These birds inhabit the quinta, and are of a very restless disposition before nesting, constantly hurrying from one weed-stalk to another in search of insects. They prefer long grass and weeds, and, as their flight is very low and straight, are hard to perceive. They live in pairs, and during the breeding-season the male is most pugnacious, driving away from his nesting-place any stranger of the same species in a most determined way. On one's approaching the nesting-place the male has a peculiar habit of rushing up into the air some 20 feet, making a loud whirring noise (with its wings, I fancy) to intimidate the intruder; at other times it is very shy and easily escapes observation.

This bird breeds at the beginning of November; the nest is cup-shaped, placed some inches off the ground in a clump of weeds, several stalks being interwoven in the structure, by which it is suspended. It is a minute bit of work, being 1 in. × 1½ in. deep in internal measurement, and composed of fine rootlets thickly lined and interwoven with grass-down, so that it has a white appearance. It is far superior to most nests in its firmness and beauty. The eggs are three in number; they vary greatly in shape, but are of a uniform faint yellowish tinge in colour.

10. Myiarchus ferox (Arg. Orn. i. p. 156).

This species also appeared at the same time as the other migrants and passed a week here, when it frequented the trees, making rapid flights after insects. Its flight is very erratic and powerful. Sometimes it darts upwards to a good height with great velocity, at others it dashes through the branches at a reckless pace. It was very wary and hard to approach. The two or three birds of the same species that were here went off to the northward.

11. Empidonomus aurantio-atro-cristatus (Arg. Orn. i. p. 157).

Another doubtful species, obtained at the same time. This Tyrant also inhabits trees, and catches insects on the wing, but is less shy than the former and does not possess such a powerful flight.

[The specimens sent (nos. 180 ♂ and 181 ♀) are both young birds of the Black-and-yellow-crested Tyrant, which in a subsequent communication Mr. Holland tells me is "fairly common" in his district. The head is black, but there is a single feather of the orange crest just coming up in the male: the superciliaries are pale brownish, and the wings are broadly edged with fulvous.—P. L. S.]

12. Phytotoma rutila (Arg. Orn. i. p. 164).

I think this is a female of the Plant-cutter, but, not being acquainted with the birds, cannot say for certain. Several of this species, all hens or immature birds, stayed here a few days on their way north or west, frequenting the trees and catching insects, after the manner of the Tyrants, in short flights from the topmost branches of trees. Until I shot this specimen I imagined that it was one of the Tyrannidæ.

[The skin sent (174 ♀) is undoubtedly that of a female of *Phytotoma rutila*.—P. L. S.]

13. Synallaxis sordida (Arg. Orn. i. p. 184).

This species inhabits the undergrowth of the monte, flying low and swiftly from one tree to another. It is very shy and restless; when feeding it does so after the manner of a Tree-creeper, searching the bark for insects, climbing upwards around the trunk and swinging under branches, until, having passed the undergrowth, it darts to the base of another tree.

[The two specimens sent (178 ♂ and 182 ♀) are both young birds, and show no traces of the fulvous throat-spot which distinguishes the adult.—P. L. S.]

14. SYNALLAXIS, sp. inc.

[The specimen sent (176 ♂) is quite a young bird in immature dress, probably referable to *S. albescens* (Arg. Orn. i. p. 179).—P. L. S.]

15. FALCO FUSCO-CÆRULESCENS (Arg. Orn. ii. p. 69).

Fairly common from March to August. It seems to consider "*Tinnunculus cinnamominus*" its special enemy. I have often seen the latter chased away from the roosting-place of the former when it had ventured too near. The chase is very spirited, the smaller hawk, by its abrupt turns, easily baffling its pursuer.

[The skin sent (162 ♂) is that of a male in full plumage. "Iris black."—P. L. S.]

XLV.—*A Review of the Species of the Family* Pittidæ.

By JOHN WHITEHEAD.

THE objects of this paper are: to bring up to date our knowledge of the *Pittidæ*, to correct a few errors in previous descriptions of the colours of the soft parts, to propose to unite certain species which I do not regard as distinct, to separate others which appear to me to have been wrongly united, and to suggest a more natural arrangement of the members of the family.

The colouring of the soft parts of these birds, when recorded, appears to have frequently been taken from the dried skins. For example, the feet of *Eucichla boschi* are variously described as "brown" (Sclater, Cat. Birds B. M. xiv. p. 447), "olive-brown" (Wallace, Ibis, 1864, p. 105), and "dirty blue in front, pale straw-colour behind" (H. O. Forbes, Ibis, 1882, p. 63). Again, Mr. Sclater's statement that the feet of *Pitta granatina* are "brown," and Mr. Wallace's assertion that they are "black," must surely be disregarded in favour of Mr. Everett's record (Ibis, 1877, p. 10) that they are "leaden blue," inasmuch as those of its ally, *Pitta ussheri*, are light bluish grey. In the 'Birds of Asia' Mr. Gould has coloured the legs of the Pittas according to fancy—those of *Eucichla boschi* being shown as light brown, and those of *E. baudi* as pink, while the legs of several other species are also wrongly coloured.

The eggs of the Pittas, are either white, or white slightly spotted with dark purple, not unlike those of the Orioles.

The young have a plumage peculiar to immaturity and very different from that of the adult bird. The nestling plumage, generally speaking, is brown, resembling that of the adult in *Hydrornis* and that of the female of *Gigantipitta*, which forms are probably more like the ancestral typical *Pittæ* than any other members of the genus. This opinion I find is contrary to that of Mr. Wallace, who, writing on the two genera above mentioned, says, "these species depart most from the typical characters of the genus." In point of date the buff-breasted group, of which *P. cyanoptera* may be regarded as the type, is certainly older than the green-breasted section, of which *P. cucullata* is typical. The nestlings of the buff-breasted section are somewhat like the adults, while those of the green-breasted division are certainly more like those of the first-mentioned group than their own parents. The young of *Pitta maxima* gives us an interesting illustration of this fact, having buff on the breast. The ornamental shoulder-patch and rump-band are generally either absent or very dull in the first plumage; but some species seem to be gradually abandoning such ornamentation (such as *P. maxima* and perhaps *P. novæ-guineæ*), so that the young of the first-mentioned species has a clearer rump-band than the adult; but I have not seen nestlings of *P. novæ-guineæ*. The ancestral plumage retained by the nestling sometimes reappears in the fully adult; for example, I have a perfectly mature specimen of *Pitta muelleri* which has the white throat of the first plumage. I do not attach any value to the amount of white on the primaries in distinguishing species, as it is greatly a question of age. Some species have, when mature, abandoned the white, such as *P. forsteni* and *P. steerii*, though this mark appears on the wings of the latter species in its first plumage, and probably in the young of *P. forsteni*, with which I am unacquainted. Other species, on the other hand, have increased the amount of white on the primaries. *P. muelleri* and *P. atricapilla* when adult have more white than when immature.

The young of the section of *P. ussheri* are somewhat different from those of other Pittas; nevertheless many characters are still present. An interesting link in coloration is, however, to be found in the young of *P. arcuata*. This might be easily mistaken for the young of one of the section of *P. erythrogastra*, which are, generally speaking, insignificant dull brown birds, and somewhat resemble *Hydrornis*. In *Eucichla* also, so far as I have been able to make out, the nestlings are dull brown. So we may conclude that, as the young of the Pittidæ in nearly every case are dull brownish birds, their ancestors were similar in plumage to *Hydrornis* and *Gigantipitta*.

The coloration of the adults in the Pittidæ is generally gorgeous—green, blue, scarlet, and yellow being the general colours of the family. Ornamentation usually takes the form of highly glossy metallic shoulder-patches, uropygial and pectoral bands, and in the *Eucichla* section, which are not thus adorned, of striped breasts and gaudy heads and tails.

Hydrornis has not become very beautiful and has no ornamental plumage. The male of *Gigantipitta* has gained a clear pale blue back, which is absent in its female. *P. cyanoptera* and its allies differ much in the amount of their ornamentation, though the general coloration of this group is very similar. *Pitta cyanoptera* and its geographical allies have much larger shoulder-patches and rump-bands than the other members of the group from Australia and the islands to the east of Java, though at the same time they have less or no black on the chin and on the median patch. This to some extent applies to the green-breasted group, which is closely allied to the buff-breasted section. The green Pittas of the Sondaic Islands and the Philippines have also larger ornamental patches than the members of their group found in New Guinea and Celebes. The Sanghir species, I should imagine, is a somewhat modern immigrant to that island, as the species is very similar to *P. atricapilla* of the Philippines. *Pitta maxima* and *P. steerii* have small rump-bands—the former species having almost abandoned this mode of ornamentation,—but they have more wing-decoration than any other members of their group. The green Pittas of New Guinea are of a very much darker green in general coloration, and have the flanks of deep purple and blue. All the species of these two groups have a median patch of bright scarlet, which is in some cases edged with black, on the abdomen.

The group of *Pitta ussheri* is very different in coloration from the last two groups, and is connected through one member of its section (*P. arcuata*) with the next or group of *P. erythrogastra*—all the birds of these two sections having bright scarlet underparts with black or white bases to the feathers. *P. venusta* is somewhat different, looking like a dull specimen of *P. ussheri*.

The dull blue and green backs of the group of *P. erythrogastra* approach somewhat the coloration of *Gigantipitta*.

The last group, *Eucichla*, may be divided into two sections—those inhabiting the mainland of Asia, without a white bar on the wings (*E. boschi* excepted), and those from the Asiatic Islands of the Archipelago, which have all a white bar on the wings. The insular forms, with one exception, have longer tails. The general coloration of this group is: above brown or red; heads ornamented with yellow or orange superciliaries or with a blue crown; breasts barred—sometimes the bars are massed, as in *E. baudi*, *E. boschi*, and *E. gurneyi*, the pectoral band of *E. cyanura*, and median-patch of *E. schwaneri*. *E. cyanea* retains the dull bluish back and is less conspicuously ornamented. The female of

E. ellioti has a dull green back. Both these species are continental. The sexes differ, the underparts of the females of *E. gurneyi*, *E. baudi*, and *E. boschi* bearing but slight resemblance in colour to their males. In *E. baudi* the pattern of the markings in the male differs from that of the markings in the female, but the coloration of the back is often similar in both sexes.

Any remarks that might be made in attempting to account for the present geographical distribution of Pittas must necessarily be purely conjectural. The elevation and submergence of the different islands, together with the consequent migrations and remigrations of species, make any attempt at describing the former ranges of the Pittas as compared with their present distribution impossible. For example, *Pitta muelleri* is found in Borneo and Sumatra, *P. bangkana* on the intervening island of Banka, and on the nearest large area of land is *P. cucullata*. If the last-mentioned species were also found in Sumatra, or if the green *Pitta* of Sumatra were peculiar to it, it would easily be understood. Java has apparently been missed by all migrations except that of *Eucichla*.

That the greater number of species and subgenera (with the exception of those of the *P. erythrogastra* group) are to be found on the mainland of Asia, and in the great Asiatic island of Borneo, and that the young of nearly all species resemble an Asiatic genus more than they resemble their own parents, are facts which suggest the theory that the Asiatic branch is the most ancient, and has moved least from its original position. According to this supposition the submerged parts of the continent between Southern Asia and Borneo would be a centre from which the lines of migration would radiate, and the focus of the genus.

The mainland of Asia and the island of Borneo together possess no less than 19 species of Pittidæ; by the addition of the great islands of Sumatra and Java and Banka only three species are added, making in all 22. The islands of Sumatra and Java are remarkably poor in isolated species, *P. venusta* only being peculiar to Sumatra; though, on account of the resemblance *E. boschi* bears to the *Eucichlæ* of Java and Borneo, I think that it was probably at one time peculiar to that island and has migrated to the Malay Peninsula. Java has one species peculiar to it—*E. cyanura*. Of the 27 species left, one is African. Of the 26 found throughout the rest of the Archipelago and Australia, twelve belong to the section of *P. erythrogastra* (some of these being of dubious validity), which is not represented amongst the true Asiatic forms. If the 5 species that inhabit the Philippines (which belong, perhaps, rather to the Asian division of land) be deducted, we find the great Austro-Malayan division reduced to 21, only two more than the division of the Asian mainland and Borneo.

After these preliminary remarks I will proceed to review the different genera of the family.

Genus I. Hydrornis.

Hydrornis is composed of three species, two of which are distinct, and one (*H. soror*) is of doubtful value. The size is large, the general colouring beneath dull brown, above dull bluish green.

A fourth species (*Gigantipitta*) is closely allied to this genus, especially as regards its female, which is without the black crown on the head and is of a dull brown all over, except the rump and tail, which are light blue. The superciliary stripes of the male, the black crown, and the blue back remind us of true *Pitta*.

Range. The members of this group are not widely dispersed, *Hydrornis* being found in the countries to the north of the Malay Peninsula, whilst *Gigantipitta* extends over the Malay Peninsula, Sumatra, and Borneo.

1. Hydrornis nipalensis.

Pitta nipalensis, Scl. Cat. B. xiv. p. 414.

"Bill dusky, fleshy at the base; legs ruddy flesh-coloured; nails long, whitish; irides lightish brown" (*Jerdon*).

2. Hydrornis soror.

Pitta soror, Scl. op. cit. p. 415.

There seems some doubt as to the locality of the single specimen of this species, and as to whether it may not be merely a slightly abnormal specimen of *H. nipalensis*; but until further examples are received I am unable to express an opinion on it.

3. Hydrornis oatesi.

Pitta oatesi, Scl. op. cit. p. 416.

Genus II. Gigantipitta.

Gigantipitta cærulea.

Pitta cærulea, Scl. op. cit. p. 416.

This species forms a connecting-link between the first section (*Hydrornis*) and the second (true *Pitta*), and for that reason I have adopted a generic title for it, so as to distinguish it from both sections of the genus.

Genus III. Pitta.

a. Group of *P. cyanoptera.*

A compact group composed of nine species. The general colours are: chin and throat white or black or of both colours, breast buff or greenish yellow, median patch dark or light crimson only or crimson and black; head brown and black, with superciliary stripe of yellow, at times with a bluish tinge; shoulder-patch large or small, green; rump-band broad or narrow, of deep glassy blue or light silvery green. *P. angolensis* is slightly exceptional in its general distribution of markings. The sexes are similar.

1. Pitta cyanoptera.

Pitta cyanoptera, Scl. op. cit. p. 420.

Iris and bill greyish black; legs pale yellowish pink.

2. Pitta megarhyncha.

Pitta megarhyncha, Scl. op. cit. p. 421.

Similar to *P. cyanoptera*; but the crown of the head more dusky brown, the central black stripe almost absent; back, scapulars, and inner secondaries of a brownish green, very different from the clear glassy green of the upper parts of *P. cyanoptera.* Bill considerably larger.

3. PITTA NYMPHA.

Pitta nympha, Scl. op. cit. p. 425.

Pitta bertæ, Scl. op. cit. p. 425.

The specimen of *P. bertæ* in the British Museum answers equally well to Swinhoe's descriptions of *Pitta nympha* and *P. bertæ*. Dr. Sclater is unable to separate *P. nympha* from *P. oreas*, and is doubtful as to the validity of *P. bertæ*. There is little doubt in my mind that *P. bertæ* is identical with *P. nympha*, and that the specimen was of accidental occurrence in Borneo.

The pale washed-out colours of the underparts of this species, resembling as it does a pale-coloured *Pitta cyanoptera*, is most interesting, and is probably due to climatic influences. A similar differentiation may be noticed in specimens of *P. brachyura*, but that species is not far enough advanced in modification to be separated into two. Supposing, however, the paler specimens were by some geographical change to be isolated from the darker ones, they would doubtless soon show as great differences as those now exhibited by *P. cyanoptera* and *P. nympha*.

4. PITTA BRACHYURA.

Pitta brachyura, Scl. op. cit. p. 423.

The young have the superciliary feathers greyish brown, edged with black; the upper part of the back greyish green, the lower part dull green; shoulder-patch and rump-band smaller than in the adult and dull blue; the upper part of the breast greyish yellow; the lower belly and crissum pale pink. The green and blue feathers of the back in some specimens are broadly centred with black; this is probably the second plumage.

Specimens from the district of Mount Aboo (North-west India) differ from their more eastern representatives in being greener throughout; the superciliaries have a distinct greenish tinge; the breast is of a lighter sandy buff, with a greenish tinge on the sides; the back of a lighter greenish blue, the ochreous tinge being absent; the shoulder-patch and rump-band are of a lighter silvery green.

This species in the more western portion of its range has had its coloration influenced by climate (probably by greater rainfall), and shows a decided tendency to increase the brightness of the green upper parts, and to lose the yellows of the head and underparts, which have now attained a decided green gloss. On the other hand, specimens from Eastern India are often of a decided yellowish tinge on the upper part of the back.

The same causes joined to more perfect isolation have probably brought about the differences between *Pitta cyanoptera* and *P. nympha*.

5. PITTA ANGOLENSIS.

The young are: above dull brownish green, throat pinkish white, belly pale scarlet, while the terminations of the wing-coverts are not so large nor so vividly blue as in the adult.

The nearest geographical ally of this interesting species is *Pitta brachyura*, which species *P. angolensis* most nearly resembles. The scarlet of the underparts is more developed than in any species of this group of Pittas, the chin and throat being also suffused with the same colour; the wing- and rump-adornments are also highly developed, the climate of West Africa having agreed with the descendants of what at some distant period was in all probability an emigrant flock of *P. brachyura*.

6. PITTA VIGORSI.

Pitta vigorsi, Scl. op. cit. p. 426.

To the localities of Banda and Timor-laut, the Island of Dammar may be added. "Bill black; iris dark brown; feet pale yellowish horn-colour" (*Wallace*).

7. PITTA CONCINNA.

Pitta concinna, Scl. op. cit. p. 426.

The young are brown on the breast, they have the flanks brownish buff and show a pale pink median patch; the back is duller brownish green; the shoulder-patch and rump-band are smaller and less bright in colour. "Bill black; iris dark brown; feet pale yellowish horn-colour" (*Wallace*).

8. Pitta irena.

Pitta irena et *P. crassirostris*, Scl. op. cit. p. 427.

Similar to *P. concinna*, but differs in having the tail black and tipped with green, whereas in the latter species the whole of the feathers are decidedly greenish; the superciliary stripe is uniformly narrow, and of a pale sandy yellow changing into pale blue on the nape. The black is confined to the chin and does not stretch down the throat as in *P. concinna*. This species also comes near to *P. vigorsi*, but has a black chin and a lighter buff under-surface.

In my opinion *P. crassirostris* has no claim to specific rank, being only a very slightly removed subspecies. The only differences are its slightly larger dimensions.

Mr. Wallace no doubt founded *P. crassirostris* on a comparison of it with *Pitta vigorsi* and *P. concinna*; while, if he had compared it with *Pitta irena*, it is doubtful whether he would have distinguished it.

9. Pitta strepitans.

Pitta strepitans, Scl. op. cit. p. 428.

Dr. Sclater rightly regards *Pitta simillima* as only subspecifically distinct from *Pitta strepitans*, the differences between the two races being merely of size.

The young in the second plumage have little signs of the black median patch, no feathers being entirely free from scarlet markings; the chin is also less black; the feathers of the back, as in *P. brachyura*, are broadly centred with black. In the first plumage the crown of the head is dull brown, the feathers being edged with black; the upper part of the breast of a dull yellowish brown, lighter on the flanks; chin whitish grey, slightly yellow on the throat; lower belly pale pink, without a black patch; the upper parts dull green.

b. Group of *P. cucullata*.

This group is composed of twelve species, the first six of which are closely allied. The next three (Nos. 7, 8, 9), forming the New Guinea division, are much darker in general coloration. No. 10, the darkest, stands alone. The last two species

(11, 12) are very different from the rest of this section, but still undoubtedly belong to it.

The general colouring of this group is green above and beneath, black in No. 10; the median patch is scarlet, or black and scarlet; the metallic ornamentation is as in the group of *P. cyanoptera.*

1. Pitta cucullata.

Pitta cucullata, Scl. op. cit. p. 442.

Young: breast brown; head light brown, back dull green; rump and wing-patches dull blue.

2. Pitta bangkana.

Pitta cucullata, Scl. l. c. (part.).

Dr. Sclater has united this species with *P. cucullata* in his synonymy, though an example from Banka Island appears in his list of specimens under *P. muelleri*; but in my opinion *P. bangkana* is distinct and intermediate between *P. cucullata* and *P. muelleri.*

Head rusty black, more brownish on the forehead, general colouring of more yellowish green; and upper part of median patch slightly blacker than in *P. muelleri.*

Hab. Island of Banka or Bangka.

3. Pitta atricapilla.

Pitta atricapilla, Scl. op. cit. p. 438.

Young, first plumage. Head rusty brown; cheeks, nape, and sides of head rusty black; throat at base of bill dusky black; rest of throat and sides of neck dull white; back, scapulars, and outer secondaries dull brownish green; breast and flanks brownish buff; median patch pale pink. No shoulder-patch; a broad rump-band of bright blue. Wings: primaries black, with a large white speculum; secondaries dusky black, broadly edged with green; six secondary coverts centred with a large white spot, forming a distinct white bar. Bill brown tipped with orange; legs brown.

(Described from Palawan specimens.)

This species is easily distinguished from *P. muelleri* by having the centre of the belly black, the scarlet on the underparts covering less than half the space when compared with that species. The metallic colour of the shoulder-patch and rump-band is also deeper and of a silvery blue.

Gould, in the 'Birds of Asia' (vol. v. pl. 76), has undoubtedly figured *P. muelleri* under the impression that he was figuring *P. atricapilla.*

4. PITTA MUELLERI.

Pitta muelleri, Scl. op. cit. p. 439.

Similar to *P. atricapilla*, but centre of abdomen and crissum bright scarlet; shoulder-patch and broad rump-band very bright shining greenish blue; tail black, sometimes tipped with blue-green.

Young. Similar to the young of *P. atricapilla*, but head less rusty in colour, being, like the chin, decidedly blacker.

Perhaps *P. muelleri* should be placed next to *P. bangkana* on account of the absence of black in the centre of the belly.

5. PITTA SANGHIRANA.

Pitta sanghirana, Scl. op. cit. p. 440.

The larger black median patch allies this species to *P. atricapilla.*

6. PITTA FORSTENI.

Pitta forsteni, Scl. op. cit. p. 442.

Larger than *P. atricapilla* and *P. sanghirana*, and having a green tail, uniform black remiges, and the rump-band and shoulder-patch smaller than in the other five species of this sub-group.

It would be interesting to know whether in the first plumage the young of this species have any white on the remiges.

7. PITTA NOVÆ-GUINEÆ.

Pitta novæ-guineæ, Scl. op. cit. p. 440.

The variations of colour in this species are most interesting. This *Pitta* is apparently gradually abandoning the ornamental metallic rump-band. Some specimens now before me are already quite free from this mark, and in all it is very dull and narrow when compared with the band in the section of this genus allied to *P. cucullata.* This loss of ornamentation is being compensated for by a bright metallic band on the breast, directly beneath the black throat.

8. PITTA MAFOORANA.

Pitta mafoorana, Scl. op. cit. p. 441.

I have never had an opportunity of examining specimens of this species, but from Gould's figure it seems to be intermediate between *P. novæ-guineæ* and *P. rosenbergi.*

9. PITTA ROSENBERGI.

Pitta rosenbergi, Scl. op. cit. p. 441.

This species differs from *P. novæ-guineæ* in having the centre of the belly scarlet, instead of black and scarlet, in the absence of the metallic necklace, and in having purple instead of bluish-green flanks.

The rump-band in four specimens now before me is narrow, but clearly defined and of a silvery green.

The purple on the flanks of the female is not so bright as in the males, and the median patch in one specimen, probably a young female, is mixed with pale pink feathers.

10. PITTA IRIS.

Pitta iris, Scl. op. cit. p. 444.

This interesting *Pitta*, peculiar to tropical North Australia, is very rare in collections; unfortunately I have been unable to examine specimens in the first plumage. Whether such specimens would bring this bird more to the yellow-breasted or to the green-breasted group is an open question; but its nearest ally is apparently *P. novæ-guineæ.*

11. PITTA MAXIMA.

Pitta maxima, Scl. op. cit. p. 419.

I venture to place this superb bird amongst the green-breasted Pittas, for reasons which I will proceed to point out. The metallic blue rump-band, which in the adult is at the present time reduced to a few feathers, but is, as might be expected, more clearly defined in the first plumage, shows us that this species has been greatly modified. These few bright feathers are the remains of what was probably at one time a broad band, which has now almost totally disappeared, and leads me to believe that the back of this species was, at some former period, green, the brighter ornamental feathers of the rump-band having taken longer to become modified than the general colouring. The same abandonment of ornamentation is also taking place in *P. novæ-guineæ*, as has been already pointed out. The great physical development of *P. maxima* is probably owing to an abundant food-supply and to a suitable climate.

The young in the first plumage are most interesting, as they show by their whitish throat and yellowish breast a decided resemblance to the members of the buff-breasted group, which was probably their ancestral type.

This lovely bird, we are told by Mr. Wallace, inhabits the rocky forests of the mountainous island of Halmaheira, where it hops about with great activity in the dense tangled forests bristling with rocks. Thinking that the white breast of this Pitta might be caused by the bird's surroundings, I wrote to Mr. Wallace, asking him to kindly let me know the colour of the rocks amongst which it lives. In answer to my question whether they were white, he replies:—"The district where my specimens of *Pitta maxima* were obtained was all coral-limestone, very rugged, and covered with scanty shrubby vegetation. This limestone is always full of holes and small caverns, so that it would offer patches of almost white or greyish-white rock, with almost black shadows. The black is, I think, the more important, as being protective to the bird, when seen from above by birds of prey, while the white of the breast would also be assimilated to the rock when seen horizontally by carnivorous reptiles (lizards or snakes), for there are no carnivorous mammals. I believe the bird is also found in the volcanic districts of Gilolo, but here also there is rugged rock full of holes and chasms (black) and scanty vegetation."

It is an interesting speculation whether the continued cast-up glare from the white rock may have influenced the change of colour of the breast of this species.

12. Pitta steerii.

Pitta steerii, Scl. op. cit. p. 442.

The young have the breast greyish, the median patch pink, each feather being edged with black; there is a distinct speculum on the primaries, which is absent in adults.

This species, as Count Salvadori has pointed out, is allied to *P. maxima*.

c. Group of *P. ussheri*.

This section is composed of five distinct species, four of which grade into each other, while the fifth, *P. arcuata*, connects this group with that of *P. erythrogastra*. *P. arcuata* has the bright post-superciliaries, and, to a less degree, the bright edgings to the wing-coverts of this section,—the green back, chestnut head, and white bases to the scarlet breast-feathers of the next section. The bases of the breast-feathers of the species 2, 3, and 4 are dusky black, which dulls down the vitality of the crimson. In *P. coccinea* the bases of the head-feathers are partly white, while in *P. granatina* they are decidedly blacker. The sexes are similar.

1. Pitta venusta.

Pitta venusta, Scl. op. cit. p. 429.

"Irides dark brown; bill black; legs and feet a beautiful shade of pale blue" (*H. O. Forbes*).

The bases of the centre breast-feathers are white like those of *P. arcuata,* but those of the flanks are dusky black.

2. Pitta ussheri.

Pitta ussheri, Scl. op. cit. p. 430.

Irides dark brown; bill black; legs and feet slate-blue (*Whitehead*).

The young bird described and figured by Gould in his 'Birds of Asia' (vol. v. pl. 75) I take to be the young of the next species, *P. granatina,* as the head shows traces of a pink tinge where the scarlet patch would be in that species.

3. Pitta granatina.

Pitta granatina, Scl. op. cit. p. 430.

Specimens of this species vary much, the black on the breast of some of them being much more glossed with purple, while others have a much brighter shade of purple on the back, so much so that Gould thought they might belong to two species, for one of which he proposed the MS. name of *P. adoranda.*

The soft parts are most likely similar to those of *P. ussheri, i. e.* legs pale slate-blue.

In the young in first plumage the head and upper parts are dusky black, with a pink tinge on the crown; the post-superciliaries dark blue and scarcely visible; the underparts dusky grey, mixed with pale pink; the wings and tail dull black, glossed and edged with blue; the bill tipped with orange.

4. Pitta coccinea.

Pitta coccinea, Scl. op. cit. p. 431.

Similar to *P. granatina,* but the scarlet on the head commences closer to the base of the bill, and is of a lighter or more rosy crimson, which difference in colour is brought about by the bases of the feathers being much whiter than in *P. granatina.* The post-superciliary stripe and wing-coverts are of a deeper blue; while the feathers of the throat are tipped with scarlet. Some specimens are much lighter on the throat than others, and are probably females. The colours of the soft parts are probably like those of *P. granatina*; the young are also similar to those of that species.

5. Pitta arcuata.

Pitta arcuata, Scl. op. cit. p. 431.

The young of this species bears a very close resemblance to those of the next group, and *P. arcuata* may be looked upon as the connecting-link between the two sections. They are brown above, shading into dull bluish green on the rump and tail; under surface dull brown, shading into pale pink on the lower part of the belly; flanks and under tail-coverts without a sign of the blue pectoral band; the post-superciliaries are dull green and hardly noticeable. This plumage is almost identical with the nestling plumage in the group of *P. erythrogastra*, whereas the adult plumage joins this species to the section of *P. ussheri*.

Iris blackish brown; bill dull brown, greyish at the base of lower mandible; legs slate-grey.

d. Group of *P. erythrogastra*.

It is almost impossible to arrange this group satisfactorily, because of the lack of material in the British Museum. Six species (namely, *P. cæruleitorques*, *P. palliceps*, *P. propinqua*, *P. finschi*, *P. loriæ*, and *P. kochi*) out of the twelve are not represented in the National collection. It may be said, however, that the group is very compact, all the species having brown or black-and-brown throats, beneath which is a pectoral band of shining greyish blue, sometimes flanked with green, and divided by a black band or otherwise from the bright scarlet breast. The backs are green-and-blue or blue; the heads brown, sometimes striped with blue; the napes brown, chestnut-brown, or bright scarlet. *P. finschi* and *P. loriæ* must be very closely allied to *P. mackloti*, specimens of that species differing very much *inter se* in the amount of brown on the nape. In some specimens of *P. mackloti* the brown of the crown changes into dull chestnut on the nape, in others into bright brick-red. Again, the crown is often striped with blue as in *P. celebensis*. *P. mackloti* might probably be split up into a dozen species, all showing slight local variations.

All the young of this group in the nestling plumage are similar, of a dull brown with indistinct pale pink median stripes and dull slate-blue rumps and tails. The legs and feet of the whole group are, I believe, greyish blue, like those of *P. erythrogastra*, and not brown.

1. PITTA ERYTHROGASTRA.

Pitta erythrogastra, Scl. op. cit. p. 432.

The young in first plumage are dull brown above, with greenish-brown secondaries; upper tail-coverts and tail dull slate-blue; beneath, feathers dull whitish brown, edged with darker brown, and of a lighter and more buffish brown on the flanks; centre of belly and under tail-coverts pale pink. Beak tipped with orange.

The soft parts of the adults are: iris hazel; bill black; legs and feet slate-blue.

2. PITTA PROPINQUA.

Pitta propinqua, Scl. op. cit. p. 433.

Of this form I have never seen adult examples, but on comparing the original description with some specimens of the last species, I am much inclined to doubt its claim to specific rank.

3. PITTA CÆRULEITORQUES.

Pitta cæruleitorques, Scl. op. cit. p. 433.

4. PITTA RUFIVENTRIS.

Pitta rufiventris, Scl. op. cit. p. 434.

"Bill dark horny, feet light bluish lead, iris light olive-brown" (*Wallace*).

5. PITTA CYANONOTA.

Pitta cyanonota, Scl. op. cit. p. 435.

6. PITTA RUBRINUCHA.

Pitta rubrinucha, Scl. op. cit. p. 435.

Bill blackish horny, feet light bluish lead, iris light olive-brown.

7. PITTA CELEBENSIS.

Pitta celebensis, Scl. op. cit. p. 436.

Iris greyish brown, bill black, feet greyish black (*Meyer*).

8. PITTA PALLICEPS.

Pitta palliceps, Scl. op. cit. p. 436.

9. PITTA MACKLOTI.

Pitta mackloti, Scl. op. cit. p. 436.

The young in first plumage is similar to that of *P. erythrogastra.*

Specimens from New Britain have blue lines on the crown of the head (*Finsch*).

10. Pitta finschi.

Pitta finschi, Ramsay, Proc. Linn. Soc. N. S. Wales, ix. p. 864 (1885).

This form is said to be distinguished from *P. mackloti* by having the whole back blue instead of dark green; but specimens are met with intermediate between the two, *i. e.* with green scapulars.

Hab. Astrolabe Mts., New Guinea.

11. Pitta loriæ.

Pitta loriæ, Salvad. Ann. Mus. Civ. Gen. 2, ix. p. 579.

This Pitta is distinguished by having no red on the nape.

Hab. Island Su-a-u, South Cape, New Guinea.

12. Pitta kochi.

Pitta kochi, Scl. op. cit. p. 433.

This is a somewhat distinct species of this group, judging by Gould's figure (vol. v. pl. 71) in the 'Birds of Asia.'

Genus IV. Eucichla.

The genus *Eucichla* is composed of seven distinct species, not all closely allied, but still sufficiently so to unite them under one generic title. The first four species have shorter tails than the last three; the first three species are without white markings on the wing-coverts, while the last four are conspicuously marked with that colour. *E. baudi* (sp. 4) is therefore the connecting-link between these two subgroups. The sexes are different.

1. Eucichla cyanea.

Pitta cyanea, Scl. op. cit. p. 417.

Though the tail of this species is considerably broader than that of true *Eucichlæ*, there is little doubt that its nearest allies are to be found in that genus, in which Oates has rightly placed it. The feathers of the breast are barred; the general idea gained by a glance is that they are spotted, but on examining the hidden parts of these feathers they will be seen to be distinctly barred as in true *Eucichla*. The superciliary stripe is intensified on the nape, as in *Eucichla boschi*.

2. Eucichla ellioti.

Eucichla ellioti, Scl. op. cit. p. 448.

I have not been able to examine specimens of this rare *Pitta,* but venture to place it next to *E. cyanea* on account of the absence of white on the greater wing-coverts and secondaries, and because its tail is shorter than in typical *Eucichla.*

3. Eucichla gurneyi.

Eucichla gurneyi, Scl. op. cit. p. 448.

The absence of white on the greater wing-coverts and on the secondaries, the pale blue tail, and blue head are sufficient to indicate the relationship of this species to *E. ellioti.*

4. Eucichla baudi.

Pitta baudi, Scl. op. cit. p. 444.

This beautiful Pitta must, I think, find its place between *E. gurneyi* and *E. boschi.* The blue head (of which the feathers in both species are long and narrow) and its blue tail and tail-coverts show its relation to the first species, while its broadly white-edged greater and secondary wing-coverts and dark blue breast betray its alliance to the latter. In Borneo I was fortunate in shooting a male, which I judge to be in the second plumage; it differs, at any rate, somewhat considerably from specimens from Baram. It has no blue band on the nape, the blue crown near the nape is distinctly marked with crimson; the black on the breast descends further down; the sides of the upper part of the breast are of a coppery reddish purple; the belly is bluish purple; the flanks are slightly barred with orange-red; the lower belly and crissum are pinkish white. The first plumage of the male I have not seen. The iris and bill of this species are black and the legs slate-blue.

The unbarred under surface of the female might raise objections to placing this species with *Eucichla,* but the wings and the sudden change of colour from brown to blue at the tail-coverts are surely true appurtenances to *Eucichla.*

Gould remarks of the figures in Elliot's Monograph that they " are represented with a conspicuous white band across the lower rump, of which there is no trace in the bird itself." In the four males now before me two have the lower belly and crissum dull pinkish white; as these feathers are long they often (as in other skins of true *Eucichlæ*) get crossed over the upper tail-coverts, and in this position they have doubtless been depicted by the artist.

5. Eucichla boschi.

Eucichla boschi, Scl. op. cit. p. 447.

The dark blue breast, white throat, and white edgings to the wing-coverts and secondaries ally this species to *E. baudi*, while its long dark blue tail and golden-orange superciliary stripe assimilate it to the next species.

"Irides dark brown; bill black; legs in front dirty blue, behind pale straw-colour" (*H. O. Forbes*).

The young in first plumage is similar to the adult female, but without any yellow or orange on the superciliary stripe, which is yellowish brown, the feathers slightly edged with black; the throat is pale whitish brown, the feathers being edged with black on the sides of neck; the white on the wing-coverts is less, and the tail is of a lighter blue; the bill has been tipped with some lighter colour, probably yellow.

Males in not quite full plumage (probably the second moult) differ from the fully adult male slightly; the orange on the head does not commence so near the eye, and the feathers of the flanks are also slightly barred with orange, as in *E. baudi*.

6. Eucichla schwaneri.

Eucichla schwaneri, Scl. op. cit. p. 446.

I did not note the colour of the soft parts in this species, but I should imagine bluish grey would be the colour of the legs and feet—not brown as is given in the B. M. Catalogue.

The young of this species I have not seen.

7. Eucichla cyanura.

Eucichla cyanura, Scl. op. cit. p. 445.

In this species there is less white on the wing-coverts than in *E. schwaneri*. The bill is black, the iris blackish brown, and the legs dull bluish grey.

Some males are of a richer or more orange-yellow on the breast and superciliaries, and of a richer reddish-brown tinge on the back than others.

In the first plumage the young male has no yellow on the head; the feathers of the crown are brown edged with black; the superciliary stripe is light yellowish brown; the stripe beneath the eye is similar to that of the adult female; the throat and sides of the neck are dull white, the feathers slightly edged with black; there is no black pectoral band; the breast is light brown, the feathers being tipped with black, not barred; the wing-coverts are spotted with brown; the back is dusky brown; there is no blue on the rump.

XLVI.—*Notes on certain Species of New-Zealand Birds.*

By W. W. Smith, Ashburton, N.Z.

Although the New-Zealand avifauna is the most perfectly known division of our zoological province, new facts in the life-history of some of the species are occasionally presented to the ornithologist. Sir Walter Buller's charming delineations of bird-life in all its peculiar forms in New Zealand, together with Mr. Keulemans's exquisitely finished and life-like pictures of many species illustrating Buller's work, have produced an ever-increasing and lasting interest in our remarkable birds. If Mr. Keulemans had studied bird-life in forests and lakes and sea-shores in New Zealand for many years, he could not have depicted the birds in more natural postures, or painted their haunts to greater perfection. In the individual history of most species Buller has left little of interest to be added; in others additional features in their habits will transpire as colonization spreads and the country becomes more settled. Since the second edition of the 'Birds of New Zealand' appeared in 1887, I have been able to gather additional notes on the habits of many species, some of which I now offer; I also add some observations on the causes of the extinction and gradual disappearance of certain native birds.

MYIOMOIRA MACROCEPHALA, Gray.

In the month of January, when the family cares are over for the season, many adults and young leave their inland bush haunts and disperse over the plains, visiting the gardens and the plantations of the settlers. They remain about farm homesteads and are common in the vicinity of towns till the month of August, when they again return to the bush to pair and breed. The migratory habit is due to the presence of more food in the settled districts than in the vicinity of the bush. The ploughing of paddocks and digging of gardens and orchards offer an abundance of food for them in the form of earthworms and beetle larvæ—the latter (*Odontria* sp.) seriously affect paddocks; and while ploughing is proceeding the birds venture far into the open.

GERYGONE FLAVIVENTRIS, Gray.

This is another visitant to the smaller plantations and hedgerows in settled districts in winter. The Grey Warbler is oftener heard trilling its pleasant song in the hedgerows than the bird is seen. Its active flitting motions are well adapted to threading its way through the thick hedgerows or the dense undergrowth of the bush. It frequents clumps of close-growing young manuka trees and flax-flats, where it obtains abundance of food. On the 14th of November last I heard an adult singing in the willow-trees growing on the river-bank. I have no record of the Riroriro nesting anywhere on the plains, and its presence in the willows in November, thirty miles from the nearest native bush, is remarkable. There are several large clumps of manuka trees still existing on the plains, and as the young saplings are a favourite site for the Riroriro's nest, they may occasionally breed in them. Several of its foster children, the Long-tailed Cuckoo (*Eudynamis taitensis*), were shot here in February, but they were all adults. Possibly we may yet be able to record the nesting of the Riroriro on the plains.

RHIPIDURA FLABELLIFERA, Gray.

RHIPIDURA FULIGINOSA, Sparrm.

Both these Flycatchers visit and remain in settled districts all over the plains in winter. They do not decrease, as they reappear in undiminished numbers annually. The presence in gardens and the airy graceful movements of the "gentlest representatives of the New-Zealand avifauna" are always objects of delight to both old and young people.

Miro albifrons, Gray.

The tame and inquisitive Wood-Robin is still fairly plentiful at Peel Forest, Mount Somers, and Albury Bush. Like the *Anthornis* it is slowly increasing, and at present it bids fair to flourish in good numbers in a few years. It, however, never leaves the bush, and is the first bird to greet the visitor on entering it.

Sceloglaux albifacies, Gray.

During the last five years I have paid occasional visits to the limestone rocks at Albury to obtain specimens of this fine Owl, but without success. The rocks were formerly a favourite haunt of the *Sceloglaux*, and were for several years my "happy hunting-grounds" for this and other rare species of native birds. At that time (twelve years ago) the rocks were badly infested with rabbits, and in order to reduce their numbers the owners of the land on which the rocks are situated liberated a large number of ferrets in the district; in a few years the rabbits decreased, and with them the *Sceloglaux*. Its laughing call is still heard occasionally about the Kakahu rocks, fourteen miles from Albury, and about the rocks in the Opihi Valley, midway between these two districts; it also occurs about rocks in the Clutha Valley, Otago, but is annually becoming one of our rarest species.

Larus dominicanus, Licht.

At the freezing-works now established in several districts in New Zealand great quantities of offal daily accumulate and are removed from the slaughter-yards into the adjoining paddocks to be again removed. The offal is a great attraction to the Sea-Gulls, and large numbers of these birds daily frequent the yards and paddocks, subsisting on both the fresh and putrid refuse. It is interesting to watch the Gulls tearing off and bolting large pieces of fat or intestine, and occasionally disputing each other's right to the morsels. I have seen numbers of them sitting about in the vicinity of the works with distended crops, gorged to repletion. Both young and old revel in the feast, and their wild excited cries are heard a long distance from the works.

ARDEA EGRETTA, Gm.

Last August Mr. A. Craighead, of Black Forest Station, McKenzie Country, wrote to me to say that he had recently seen a specimen of the White Heron near the head-waters of the Waitaki River. This is the only record of its occurrence east of the main range for fifteen years.

ANTHORNIS MELANURA, Gray.

The history of this delightful songster of the New-Zealand bush is so perfectly given by Buller that nothing need be added to it here. The sudden disappearance of this species from many of its old haunts in the North Island, and the apparently inevitable extinction that similarly threatened it in the South Island, was truly deplored by all naturalists. The causes to which are attributed the gradual or rapid disappearance of certain species of New-Zealand birds have been fully discussed by Buller; these include the probable effects of the introduced honey-bee on the habits of the *Meliphagidæ,* the changed environment produced by the perfect or imperfect clearing of open swampy lands and forests, and the introduction of predatory animals. In discussing the various causes and their effects, he contended that the honey-bee theory was "quite insufficient to meet the case," and stated, "As the result of long observation I have come to the conclusion that, apart from the effects produced by a gradual change in the physical conditions of the country, the chief agent in this rapid destruction of certain species of native birds is the introduced rat." Referring in 1887 to the disappearance of *A. melanura,* Buller wrote: "Doubtless it is only a question of a few years, and the sweet notes of this native songster will cease to be heard in the grove; and naturalists, when compelled to admit the fact, will be left to speculate and argue as to the causes of its extinction "*. After a lapse of six years I now venture to give a more hopeful view of the case by demonstrating that some cause favouring the native meliphagous birds is again on the ascendant, which bids well at present to re-establish *A. melanura* within the next decade, at least if no counteracting force comes into play. For several years I have frequently visited Alford Forest and Mount Somers bush in Mid-Canterbury, Peel Forest and Albury bush in South Canterbury, and have on the occasion of each visit found this species to be considerably increasing. I lately stayed ten days at Winwood, Mount Somers, and daily found the birds, both adults and young, in good numbers inhabiting the warm wooded valleys of the Gawlor Downs. When at Albury, two months ago, I again found *A. melanura* in considerable numbers inhabiting the bush-covered slopes of the Tengawai Gorge. Twice I was on the top of Rocky Peninsula at daybreak listening to the waking melody of the Bell-bird echoing across the gorge from the opposite bush. Both mornings were serene and beautiful, and the mingling of the songs of numerous birds with the soft murmur of the river far below presented one of those enchanting scenes in bird-life daily realized by the ornithologist in New Zealand. I am informed by Mr. R. Beck, inspector of roads and bridges for Westland, that the Korimako is still plentiful in some of the districts that he visits. The causes which have exterminated some species of birds and have greatly reduced the numbers of others on the eastern side of the Alps cannot have so materially affected or reduced the numbers of the same species inhabiting the forest-clad region of Westland. The forests on the eastern side of the South Island are of limited extent, and were the first to be worked or cut out by the colonists of the South Island for building-timbers and fuel. The thinning and clearing of the smaller forests of many trees and shrubs bearing melliferous flowers would appreciably affect the honey and insect supply of food of both meliphagous and insectivorous birds in a short space of time. To see a number of Korimakos in the spring months regaling themselves on the sweet flowers of the kowhai, ngaio, papauma, tawhiwhi, and manuka trees is one of the naturalist's charms of the year. But, alas! from several districts, where only a few years ago these sylvan scenes were present, the forest flowers and the sweet song of the Korimako have vanished, and the flocks of the farmer now occupy their sites.

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* Birds of N. Z. ed. 2, vol. i. p. 87.

While studying the changes in the New-Zealand avifauna it is imperative to first consider the primitive state of the islands. The remote and long separation of New Zealand from any continental area, and the development of the remarkable extinct and existing avifaunas within its limits, would require long and steadily evolving epochs to develop the numerous bygone and the living anomalous species peculiar to the New-Zealand region. Let us take a glimpse at the natural features and climatic conditions of New Zealand twenty-five to forty years ago, and the methods of colonization practised by the settlers, and we shall readily understand how the results were so disastrous to the native birds. The plains of Canterbury were "billowy bays of grass" inhabited by the native Quail (*Coturnix novæ-zealandiæ*). The rich forests then clothing the flats and spurs of the lower ranges existed in their natural freshness, and were replete with many forms of endemic birds. In a few years the whole of the plains had been repeatedly swept by grass-fires, and as a result the Quails vanished rapidly. The fires would occasionally sweep through extensive flax-flats, and destroy the prospects of a good flowering season. The stately and melliferous flowers of the flax yield a rich supply of food to the Korimako and Tui (*Prosthemadera novæ-zealandiæ*) and to the Kaka Parrot (*Nestor meridionalis*) in the early summer months. It is very interesting to watch these birds flying from flower to flower and licking up the nectar with their brush-like tongues. Many of the rich flax-flats, like the smaller forests, have been cleared and now form excellent pasture-land. The colonizing operations have produced a serious effect on the climate, and have been, I believe, the direct cause of the unequal seasons experienced in New

Zealand during the last sixteen or eighteen years. As an illustration of seasonal derangement, I may instance the several irruptions of native birds which have occurred within that time. The frugivorous and meliphagous birds were most affected. All the species of Parrakeets (*Platycercus*) swarmed into the settled districts and consumed the garden fruits in a few weeks. The green currants, gooseberries, cherries, plums, apples, pears, and quinces were alike attacked and ravenously devoured. In a former paper * on the Parrakeets I wrote as follows:—"During the last two irruptions they perished in thousands, as every possible method was tried to trap and destroy them; yet they compensated the settlers to a great extent by consuming the seeds of many noxious weeds, which they attacked when the green fruit in the orchards had been destroyed by them. I often observed them in large flights, consuming the seeds of *Chenopodium urbicum*, an introduced weed, which grows to the height of 4 ft. and 5 ft. and spreads rapidly. They vigorously attacked the seeds of the various species of *Sonchus*, or sow-thistles; the dock (*Rumex obtusifolius*), which grows in large masses on the bottom of sluggish watercourses; the Yorkshire fog (*Holcus mollis*); and many other injurious plants." By the 1st of March they had returned to the native bush, but in sadly reduced numbers. Along with the Parrakeets, many of the honey-eating birds visited the settlers' gardens and subsisted for weeks on the blossoms of the wattle-trees, blue gums, fuchsias, pentstemons, and many other plants growing in the flower-borders. In the same years several districts in the north and west coast of the South Island were invaded by vast numbers of bush-rats. These animals, which, as Buller and other writers have shown, subsist during the greater part of the year on the fallen mast of forest trees, were compelled, from the same cause, to migrate in search of food. In the autumn, when the forest trees have ceased blooming for the season, the honey-eaters attack the ripening fruits of the early-blooming species, and subsist through the winter on the luscious pulp and juice, combined with insect food. The latter consists of larvæ and chrysalises obtained in the decaying limbs of trees and in moss-covered trunks, everywhere abundant in the bush. A comparatively bloomless season of the forest-flora would also materially affect the more strictly insectivorous birds by inducing the Lepidoptera to migrate to other districts in search of flowers, and thus cause a scarcity of food the following season. I cannot entertain the theory of favourable breeding-seasons producing more individuals than the food-supply will support. It is unquestionably the reverse cause that produces the irruptions of certain species of birds and insects into Britain from European and Asiatic countries at varying intervals of years. In New Zealand birds of all species thus affected are invariably in an extremely emaciated and starving condition. Several native insectivorous birds are chiefly ground-feeders; the latter do not suffer so much from lack of insect-food as others do, as they are able to subsist on earthworms and coleopterous larvæ common in the layer of humus covering the bottom of the bush.

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* Transactions of the N.Z. Institute, vol. xxi. p. 212 (1888).

As the irruptions of native birds and the total or gradual disappearance of certain species were unknown to the Maoris before the European colonization of New Zealand, we may safely infer that they are due to certain causes operating with greater effect as colonization proceeded. The older colonists are fully aware that the seasons in the early days of Canterbury settlement were much more genial and equable than they have been of late, the summers were hotter, and the winter rains were much heavier and more periodical with fewer frosts. When the Canterbury plains were thickly clothed in tussock-grass, the latter absorbed and retained the sun's heat until cooled by showers of rain. In the spring months when the north-west or snow-melting winds blew across the plains, they took up the dry heat from the tussocks and became the "hot nor'-wester." These winds in blowing across the alpine snow-fields frequently became charged with moisture, which fell in copious showers along the base of the ranges and on the western portions of the plains. The latter are now almost cleared of native tussock, and as a result the north-west winds blow much cooler, while the north-west showers annually reach farther across the plains. The removal of the heat-absorbing tussock-grass from the plains, and of much of the bush from the base and slopes of the lower ranges on their west, is the main cause of the modification of the climate, with its disastrous effects on both insects and birds. On the cause of the irruptions of native birds I wrote in 1888 as follows:—" The cold winter of 1883, followed in the spring by severe late frosts, and the continuous cold wet summer of 1883–84, produced a wide-spread failure of the food of many species of birds. In the winter and spring followed the irruption of Parrakeets, extending over the whole of the east coast of the South Island, and on the west coast the 'plague' of rats, which swarmed into some of the towns and villages. The Tui and Korimako left their home in the bush and migrated across the open country to procure food. All were in miserable condition and on the verge of starvation. . . . . . The same season the Wood-Pigeon was miserably lean, being compelled to feed on the leaves of the kowhai and other trees, which cannot nourish and fatten like the fleshy nutritious berries of the miro and others. In the same year the habits of the Kaka (*Nestor meridionalis*) and the Silver-eye (*Zosterops cœrulescens*) were affected in a similar manner and from the same cause. I collected several specimens of the former in a plantation of English trees near Oamaru, all in a wretchedly weak and lean condition. Their presence was a rare occurrence in the district, which is about thirty-five miles from the nearest native bush. The Silver-eye, or 'Blight-bird,' frequented the gardens in the settled districts in unusual numbers, and attacked the ripe fruits, nothing coming amiss to them. All the species affected were in wretched plumage, and their bodies were infested with a species of *Acarus*"[*]. These facts illustrate the effects of changes of climate and environment on the economy of the native birds, but they do not explain the cause of the rapid disappearance of certain species. The Quail, the Stitch-bird (*Pogonornis cincta*), and *Notornis mantelli* have vanished, according to Buller, in obedience to " some inscrutable law

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[*] *Op. cit.* p. 206.

of Nature." The loss of the species affected is due to some general cause, and with the able author of the 'Birds of New Zealand' I implicitly agree that it is attributable to the ravages of rats. There is no doubt that the Norway rat was introduced into New Zealand in the early days of colonization, perhaps even in the earlier days of the visits of whalers to the South Seas, and that, there being no indigenous Mustelidæ or other natural enemies, excepting the native hawks, they multiplied in our genial climate at an astounding rate. Precisely the same thing is happening at the present time in the districts where the introduced stoats and weasels have been liberated to wage war against the rabbits. They first turn their attention to, and appease their voracious appetites on, the easily captured native birds. A writer in the 'New-Zealand Journal of Science' recently stated that a certain district in Southern Westland was now cleared of the interesting native birds by these bloodthirsty little mammals. Alas for the wisdom of the Colonial Legislature in introducing these fell destroyers into the beautiful Islands!

A few instances showing the numbers and distribution of rats in New Zealand may be of interest. About twenty-five years ago, when Peel Forest was first opened for timber-cutting, several of the bushmen afterwards informed me that wherever they pitched their tents or huts their stores were attacked in a few days by rats. Mr. Eugene Lorgerie, an old resident in the forest, once informed me that he had shot a large rat while in the act of running along a high limb of a totara tree. But the most remarkable fact about the occurrence of rats in remote places in the early days was illustrated during the gold fever on the west coast. Amid great hardships the diggers penetrated into unknown regions in that great forest country in search of the precious metal; no matter where the hardy fellows went, up lonely rivers or wooded mountain spurs, they found themselves invariably preceded by the ubiquitous rat, and the greatest precaution had to be taken to preserve their scanty supplies of food from the attacks of these animals. Rats are common everywhere in the Westland bush at the present time, and are unpleasantly numerous about many homesteads of the settlers on the Canterbury plains, and on all the Downs Country under the main range. There are two unfortunate drawbacks to most species of native birds, namely their exceeding tameness and their easily accessible nests. Before the advent of the Anglo-Saxon and his accompanying evils in New Zealand the native birds had practically no enemies to contend with, and in many districts in the South Island peace and harmony had reigned in their domain for long ages. Hence their tameness.

The causes favouring the present increase of the honey-eating birds are not very clear to me. I will mention a few facts which seem to me to have some bearing on the question, although they may be wide of the true cause. What effects the honey-bee can have, if any, on the economy of the honey-eaters, it would be difficult for the advocates of the theory to explain. But there is one fact which must be noted, namely, that the honey-bee has been a comparative failure in some districts for the last five or six years. The failure has been sometimes attributed to the introduced species of humble-bees, which have increased, like many other alien animals, at rates unprecedented in any country in the world. From observations on the habits of humble-bees in New Zealand it has been ascertained by several able observers that with the exception of six or seven plants they do not visit the native flora, and therefore cannot counteract the effects of the honey-bee on the honey-eating birds. Mr. W. H. Hudson has recently suggested in 'The Field' the possibility of the birds being stung to death when attacking and eating the bees. Such a result would be very probable if the species now disappearing attacked bees, but many of them are ground-feeders, and are confined to the dense bush where bees never enter: *Glaucopis cinerea, Turnagra crassirostris, Creadion carunculatus, Miro albifrons, Apteryx australis,* and *A. oweni* are some of the species referred to. The remarkable *Stringops habroptilus,* which feeds during the night in the dense bush, is also on the list of doomed species, yet it never eats bees. That the bees rob the honey-eaters of a little nectar during the season no man would doubt. But, after long and careful consideration of this question, I can positively say that I have never observed the bees in such numbers as to affect the honey-eaters. I have watched them daily for years regaling themselves together on the yellow kowhai blossom, and during all that time I never saw the honey-eaters attack the bees. I have also watched them feeding for hours together on the peach-blossom in spring without the least sign of molestation, nor have I ever observed them feeding on any of the numerous species of Diptera that frequent those blossoms in fine weather. It is a common feature of many of the New-Zealand plants to find ripe fruit and the next-season's blossom together on them, and on these and minute larvæ the honey-eaters subsist. Their habits and structure are specially adapted to their mode of living on honey and fruits, and their presence constitutes a daily charm in the New-Zealand bush. The honey-bee theory in its bearing on the disappearance of any of the native birds is, I am convinced, an utter fallacy. I do not know that the bees may not, in some cases, have acted beneficially on the economy of the honey-eaters by fertilizing the flowers and rendering the trees more fruitful; but this question I leave at present. The nests of the honey-eaters, like those of other species gradually disappearing, have suffered from the attacks of rats; and from the causes which have diminished the numbers of these animals in certain districts, I am able to show that the honey-eaters and other species are again increasing.

About fifteen to twenty years ago, while the thinning-out of the chief timber-trees in the larger forests of Canterbury was proceeding, much of the undergrowth and the half-grown trees were left intact. The clearing away of the larger timber enabled the younger trees to grow more freely, and at the present time they have grown into good-sized fruitful trees, bearing berries annually. Many of the forest-lands have been enclosed and are used as grazing paddocks. In the forests and patches of bush on private estates sheep and cattle are allowed to graze, and during hot dry weather they roam through them feeding on the undergrowth. I have seen considerable areas of the latter cleared in a few years by cross-bred sheep, which are not so delicate in their tastes as the merino. It is therefore evident that the clearing-away of the undergrowth of the bush, and the compression of the humus and rotten wood by the animals grazing thereon, deprive the rats of their places of concealment, causing them to leave the bush and to seek food elsewhere. The stimulus given to sheep-farming by the development of the frozen meat trade has made farmers increase their flocks and use every available piece of land for pasturage. As the scrub of the bush growing on sloping spurs becomes cleared by sheep, there is the most reassuring prospect that many of the species now becoming rare will be re-established in a few years, and this apparently is one of the causes favouring the slow increase of the native honey-eaters and other species inhabiting the bush in Canterbury. In addition to the visits of *Anthornis melanura* to the blooming acacia trees in spring, the birds have of late years attacked the ripening apples on the trees in the orchards near the bush, and on that account do not get a very good name from their unkindly owners.

At the present time when the attention of naturalists is drawn towards our remarkable birds, and the apparently inevitable fate of many species, any reassuring remarks concerning any of them will, no doubt, be welcome. But in the forests of Westland, where rats are numerous and weasels and stoats are increasing, there is at present little hope of saving them from extinction. It is truly a melancholy prospect to know that many of the species belonging to the most remarkable avifauna ever evolved in any zoological region are rapidly vanishing from the earth, and that there are no apparent means available to counteract the catastrophe.

XLVII.—*A List of the Birds inhabiting the Chatham Islands.*

By H. O. Forbes, F.R.G.S., M.B.O.U.

(Plates XIV., XV.)

The Chatham Islands, which form a portion of the New-Zealand region, lie in about S. lat. 44° and W. long. 176° 30′, some 500 miles east and a very little south of the latitude of Lyttelton, in the province of Canterbury, N.Z. The group consists of about a dozen separate islands, of which Wharekauri (Chatham Island) is the largest, and Rangiauria (or Pitt's Island), to its south-east, the next in size. On the east side of Pitt's Island lies Rangatira (or South-east Island), the third largest of the group, and off its west coast is situated the small islet of Mangare and other rocks and fragments of land. To the north and west of Cape Young, a promontory of Wharekauri, lies the rocky group of the Sisters, or Rangitutahi. Still further to the east of the main island than any of its satellites which I have named, the sea washes round Matahara, or the Forty-fours, rocks so-named from their lying all but on the 44th degree of South latitude *.

This little archipelago was discovered by H.M.S. 'Chatham,' the companion of H.M.S. 'Discovery,' the vessels which formed the expedition of Captain Vancouver in the Pacific Ocean from 1790 to 1795. The two vessels were parted from each other during a storm, after their departure from New Zealand, and did not sight each other again till their port of rendezvous in Tahiti was reached. Each had then to report a discovery, the 'Chatham' having found the island of Wharekauri, on which her commander, Lieut. Broughton, landed and conferred its name in honour of the Earl of Chatham, while the 'Discovery' had narrowly escaped disaster upon a low rocky islet to the south of New Zealand, to which Capt. Vancouver gave the significant name of "The Snares," from its dangerous position in the fairway of vessels rounding the southern end of New Zealand. Both islands have proved of much ornithological interest.

Sir Walter Buller, in the second edition of his 'History of the Birds of New Zealand,' has in most instances mentioned the species found in the Chatham Islands. Since the

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* On these Islands generally, see "An Account of the Chatham Islands," by Dr. E. Dieffenbach (Journ. R. Geogr. Soc. xi. p. 195 (1841); and "The Chatham Islands: their relation to a former Southern Continent," by H. O. Forbes (Suppl. Papers R. Geogr. Soc. vol. iii. p. 607 (1893).—Ed.

publication of that work, however, a good deal of additional information has been obtained through the collections made there at the expense of the Hon. Walter Rothschild, and through the exertions of my excellent correspondent Mr. Hawkins, after the visit I was fortunate enough to be able to pay to the islands in January 1892. On that occasion my time was chiefly devoted to the investigation of the extinct avifauna, and I could give but a very small portion of it to the study of the species now living there. I was happily, however, able to persuade Mr. Hawkins, who was my guide and assistant on that occasion, to undertake the task of collecting and observing the species inhabiting the different islands. To his exertions therefore I am indebted for much of the material on which the present communication is founded. I had specially drawn his attention to the interest attaching to the two known species of *Cabalus* (*C. dieffenbachi* and *C. modestus*), and I am sure that ornithologists will agree with me that our best thanks are due to him for the thorough way in which his search has been conducted, and which has resulted in the re-discovery of the long-lost *Cabalus modestus*. His investigations have, however, I fear, made it certain that *C. dieffenbachi*, of which the last specimen was obtained by Dr. Dieffenbach half a century ago on the main island, has ceased to exist. The same fate, I regret to think, awaits *C. modestus*, as I learn that cats have been introduced into the isolated islet-home where this bird has survived so long, for the purpose of exterminating the rabbits. These pernicious rodents, having somehow obtained a footing there, are devouring the pasture intended for the flocks, of the wool and flesh of which the struggle of civilization has necessitated that even a so distant, small, and inaccessible sea-girt rock shall contribute its quota.

Since the colonization of the Chatham Islands, both by Maoris and Europeans, about fifty years ago, the birds have lamentably decreased in number. Dr. Dieffenbach, the Naturalist to the New-Zealand Company, who visited the archipelago in 1840, has left it on record * that "vast flocks of the common Grey Duck, Snipes, Plovers, Curlews, and Red-bills inhabit the lakes and sea-shores, and a Sand-Lark, which builds its nest on the ground, abounds in the bushes of *Phormium* [the New-Zealand flax] and fern. In summer the ducks' eggs furnish the natives with a favourite article of food. The forest is enlivened by numerous Tuis, or Mocking-birds." Some of these birds have become scarce, for the introduction of cats, dogs, and especially pigs, and the constant persecution of every sort of bird—indeed, of every living thing—by the natives, have produced, and are still producing, the inevitable result—the slow but certain extermination of all the original land-birds.

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* See J. R. G. S. vol. xi. p. 207.

I now proceed to enumerate the birds of the Chatham Islands, giving references to the last edition of the 'Birds of New Zealand.'

1. MIRO TRAVERSI.

Miro traversi, Buller, Birds of N. Z. 2nd ed. i. p. 38.

Found on Mangare islet. I have received specimens marked also "Little Mangare."

2. MYIOMOIRA MACROCEPHALA.

Myiomoira macrocephala, Buller, op. cit. i. p. 42.

This bird occurs also in South Island of New Zealand and on the Auckland Islands.

3. GERYGONE ALBOFRONTATA.

Gerygone albofrontata, Buller, op. cit. i. p. 49.

4. SPHENŒACUS RUFESCENS.

Sphenœacus rufescens, Buller, op. cit. i. p. 62.

This bird has, I fear, now become extinct on the group.

5. ANTHUS NOVÆ-ZEALANDIÆ.

Anthus novæ-zealandiæ, Buller, op. cit. i. p. 63.

Still abundant on most of the islands.

6. RHIPIDURA FLABELLIFERA.

Rhipidura flabellifera, Buller, op. cit. i. p. 69.

7. RHIPIDURA FULIGINOSA.

Rhipidura fuliginosa, Buller, op. cit. i. p. 72.

8. ZOSTEROPS CÆRULESCENS.

Zosterops cærulescens, Buller, op. cit. i. p. 77.

These birds at certain seasons frequent the shores of Hanson's Bay in myriads, feeding on the little sand-hoppers (crustacea of the Amphipodous group).

9. PROSTHEMADERA NOVÆ-ZEALANDIÆ.

Prosthemadera novæ-zealandiæ, Buller, op. cit. i. p. 94.

10. ANTHORNIS MELANURA.

Anthornis melanura, Buller, op. cit. i. p. 85.

This bird is found on Wharekauri, Rangiauria (Pitt's Island), and on the small islet of Mangare, where it lives in association with *A. melanocephala*.

Several skins of young birds received from Mangare, which for the present I attribute to this species, are much larger and of a darker green on the underside than the specimens of young and females of *A. melanura* from New Zealand in the British Museum. They may represent a new species; if so, they belong to the group *A. melanura*; for they possess the pale breast-plumes under the angle of the wing which are so characteristic of the young and old of both sexes of that species, and which are absent in the type of *A. melanocephala* in the National Collection, the only specimen of this species I have been able to examine.

11. ANTHORNIS MELANOCEPHALA.

Anthornis melanocephala, Buller, op. cit. i. p. 92.

My specimens were obtained on Little Mangare, which is, according to Mr. Hawkins, "now terribly difficult to reach, as the cliffs have fallen down."

Dr. Dieffenbach noted in 1840 that "the Mako-mako, the finest songster in New Zealand, is also found here, and is larger than it is there, which raises the suspicion of its being another species of the Honey-eater" (J. R. G. S. xi. p. 207).

The museum of the Hon. W. Rothschild at Tring contains, I understand, a large series of this species.

12. EUDYNAMIS TAITENSIS.

Eudynamis taitensis, Buller, op. cit. i. p. 127.

13. Chrysococcyx lucidus.

Chrysococcyx lucidus, Buller, op. cit. i. p. 132.

The Shining Cuckoo which visits the Chatham Islands is of the same species as the Australian, which is found in New Zealand also. The belief some time prevalent, therefore, that one species migrated to New Zealand, and that a different species passed to the Chatham Islands, but did not rest in New Zealand, is quite a mistake.

14. Cyanorhamphus novæ-zealandiæ.

Platycercus novæ-zealandiæ, Buller, op. cit. i. p. 137.

This bird was, in Dieffenbach's time, 1840, very much more abundant than it is now. It is found on Wharekauri and on Rangiauria, but not on Mangare, where *Cyanorhamphus forbesi* only occurs.

Dr. Dieffenbach, in the account of his visit to the Chatham Islands (J. R. G. S. vol. xi. p. 207), observes that "a little green Parroquet flocks in hundreds to the potato-fields, and proves a great nuisance to the farmer by picking up the seed as soon as it is sown. This bird is generally a little larger than the New-Zealand Parroquet, and is perhaps a different species."

15. Cyanorhamphus forbesi.

Platycercus auriceps, Travers, Tr. N.Z. Inst. v. p. 216; Buller, op. cit. i. p. 142.

Cyanorhamphus forbesi, Rothsch. P. Z. S. 1893, p. 529.

At the meeting of the British Ornithologists' Club on the 17th of May last I exhibited a skin of this bird which I had obtained from my correspondent, Mr. W. Hawkins, in the Chatham Islands, and observed that it seemed to me to differ from *Cyanorhamphus auriceps* of New Zealand in several points, but that my limited material did not enable me to come to a decision upon the subject. The Hon. Walter Rothschild, in whose collection there is an unrivalled series from the same locality, has investigated the question and has arrived at the conclusion that the species from the Chatham Islands differs from that on the mainland. He has done me the honour to associate my name with the species. It is found on the little islet of Mangare.

Its eggs are pure white and rotundo-ovoid in shape. The only two eggs which I have seen measure 1·05 × 0·85 and 1·00 × 0·85.

16. CIRCUS GOULDI.

Circus gouldi, Buller, op. cit. i. p. 206.

This bird is now becoming very rare on the group. I found its remains, associated with those of other extinct birds, far from uncommon, showing that at one time it must have been much more abundant than it is now.

17. CARPOPHAGA CHATHAMENSIS.

Carpophaga novæ-zealandiæ, Buller, op. cit. i. p. 229.

Carpophaga chathamensis, Rothsch. P. Z. S. 1891, p. 312.

Carpophaga chathamica, H. O. Forbes, Nature, vol. xlvi. p. 252 (1892).

Carpophaga chathamensis, Salvadori, Cat. B. vol. xxi. p. 252.

The native name is "Kuku," or "Kukupa" according to Dr. Dieffenbach. I obtained my first specimen of this bird on the 31st of January, 1892; it was shot for me by Mr. Hawkins at a great altitude with his rifle. On its fall I was surprised to observe that it appeared quite distinct from the New-Zealand species—although I could scarcely think it possible that it should have been overlooked by three such good ornithologists as Dr. Dieffenbach, Mr. Travers, and Mr. Potts, who must all have eked out their scanty provisions there by feeding on these Pigeons. This was nevertheless the case. I consequently proposed and published, with a short description in 'Nature' (*loc. cit.*), the name of *C. chathamica* for the species, in which I was, however, anticipated by Mr. Rothschild, whose collectors had obtained it the year before and sent it to Tring.

This Pigeon is now becoming scarce, and at present is most abundant on the south coast, where it loves to play in the strong up-current that towers into the air, rebounding from the perpendicular face of the cliffs, when a strong sea-breeze is blowing; and on the north coast, on the estate of Mr. Chudleigh, who does all he can to protect the native birds, by prohibiting their being shot on his property.

"The old Maoris and Maorioris say," writes Mr. Hawkins, "that years ago, at a certain time of the year, the Pigeons used to come in thousands: in fact, that you could sit under a tree on one of the little rises in the bush and spear thirty to forty in an afternoon. A singular fact about them was that in their crops and maws there was nothing but kelp, and that they all landed on the high land round Waitangi where the township now is; [that is, on the west coast of the portion of the island to the south of Petre Bay]. They came in the early spring, about August." However this may be, this Pigeon feeds also on the fruit of the "Karaka" (*Corynocarpus lævigatus*), likewise on the berries of a species of *Smilax*, and on the "Tutu" or "Tut" fruit, which formed the contents of the stomachs of the birds I personally examined.

18. CHARADRIUS BICINCTUS.

Charadrius bicinctus, Buller, op. cit. ii. p. 3.

19. THINORNIS NOVÆ-ZEALANDIÆ. (Plate XIV. figs. 5, 6, egg; Plate XV. fig. 2, young.)

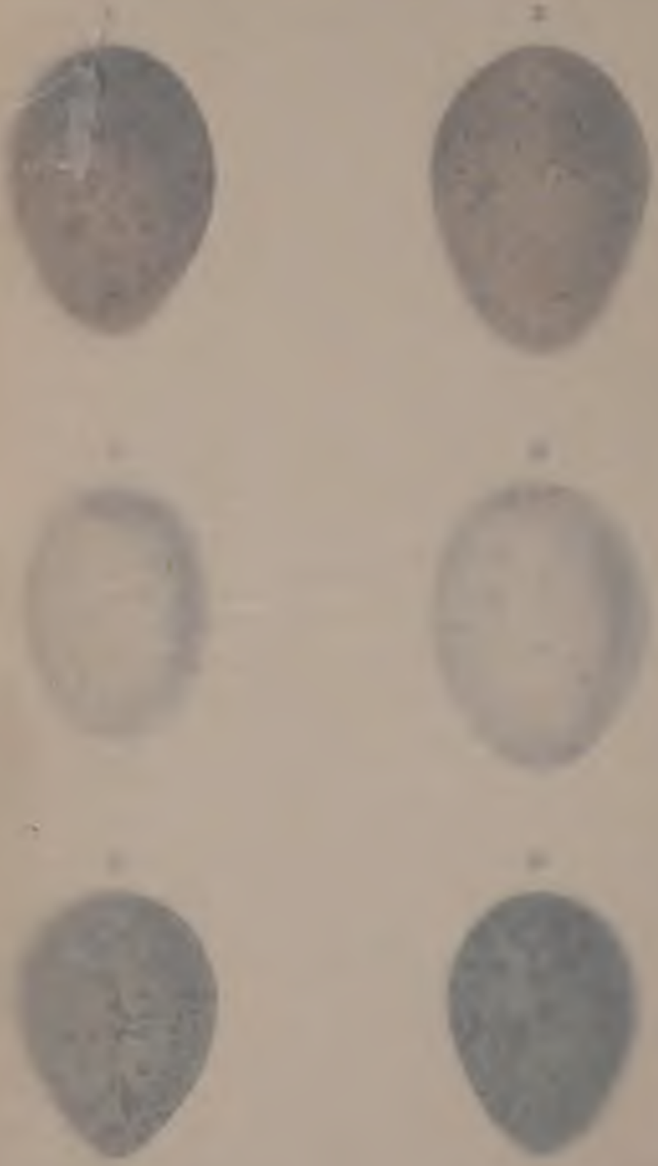
Thinornis novæ-zealandiæ, Buller, op. cit. ii. p. 11.

This bird is found on the Rangitutahi, or the Sisters, a group of rocks to the north-west of Wharekauri, and on Mangare, whence my specimens were obtained. Its breeding-ground is confined to the Chatham Islands; stragglers only have been obtained in New Zealand.

The young of this group are very difficult to describe in words so as to convey any idea of their coloration. Mr. Keulemans's excellent figure, given on Plate XV. fig. 2, explains itself.

The eggs of this species are in shape pyriform. Their dimensions are:—1·42 × 1·02, 1·47 × 1·01, 1·40 × 1·01, 1·40 × 1·0. Their ground-colour is olive-buff, marked pretty evenly all over, but more abundant at the larger end, with fine spots and fine linear streaks and markings of clove-brown, often becoming almost black. The *Thinornis* lays three eggs.

Ibis 1893. Pl. X



J. Smit del. et lith.

Mint

EGGS OF CHATHAM-ISLANDS' BIRDS.

—“The old Maoris and Maoriories say,” writes Mr. Hawkins

Ibis. 1893. Pl. XIV.

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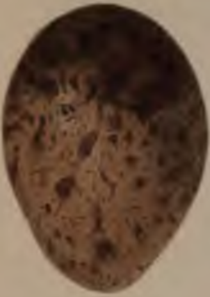

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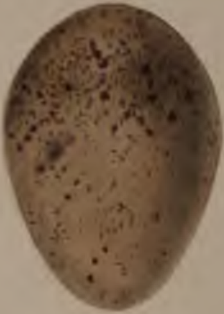

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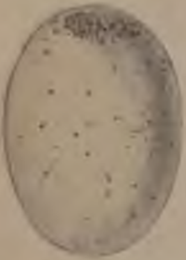

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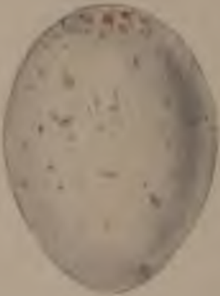

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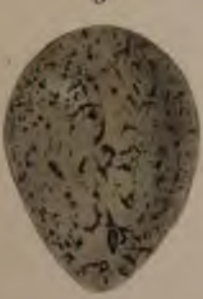

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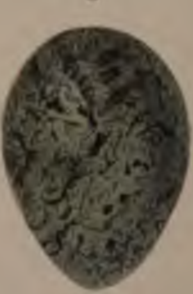

J. Smit del. et lith.

Mintern Bros. i

EGGS OF CHATHAM-ISLANDS' BIRDS.

20. **Gallinago pusilla.** (Plate XIV. figs. 1, 2, egg; Plate XV. fig. 1, young.)

20. Gallinago pusilla. (Plate XIV. figs. 1, 2, egg; Plate XV. fig. 1, young.)

Gallinago pusilla, Buller, op. cit. ii. p. 33.

The eggs of this Snipe are now described and figured for the first time. In shape they are ovoid; in dimensions: 1·5 × 1·12, 1·67 × 1·15, 1·5 × 1·1, 1·67 × 1·12. The ground-colour varies from a dark pinkish to a dark ochraceous buff, covered with dark seal-brown spots and smudges, more thickly crowded round its widest circumference. Some specimens have pale lavender-grey blotches and spots round that region, which are more sparsely distributed over the rest of the egg. The smaller end is nearly free from spots.

Through the kindness of the Editor, I am able to give a figure of the young of this species also.

My correspondent, Mr. Hawkins, writes me as to the habits of this bird:—"This Snipe has all the habits of the Rail, feeding at night, and making a twittering noise while so doing. During the day it hides in hollow trees and in bunches of thick undergrowth—in fact, wherever it is dark. When the young are first hatched they feed in the daytime; but in about a week they feed at night. This bird lays three eggs."

21. Limosa novæ-zealandiæ.

Limosa novæ-zealandiæ, Buller, op. cit. ii. p. 40.

22. Larus dominicanus.

Larus dominicanus, Buller, op. cit. ii. p. 47.

23. Larus scopulinus.

Larus scopulinus, Buller, op. cit. ii. p. 55.

The eggs of this species vary in shape from a rotundo- to an ellipso-ovoid; their dimensions are as follows:—2·19 × 1·47, 2·19 × 1·5, 2·10 × 1·47, 2·19 × 1·57, 2·10 × 1·52, 2·09 × 1·5, 2·19 × 1·5, 2·0 × 1·6, 2·10 × 1·47, 2·12 × 1·45. In ground-colour the eggs vary very much from cream-colour through olive-buff to an olive; they are spotted sometimes sparsely all over, sometimes chiefly round the widest circumference, sometimes evenly and thickly all over. The spots are of three shades of colour, from tawny olive to cinnamon, French-grey, and cinereous. In the darker drab eggs the spots are blotchy and dirty brown. One specimen has a ring of pale sea-green near its pointed end.

24. LARUS BULLERI.

Larus bulleri, Buller, op. cit. ii. p. 58.

25. STERNA FRONTALIS.

Sterna frontalis, Buller, op. cit. ii. p. 68.

The eggs of this species vary in shape from a narrow to a rounded ovoid; their dimensions are 1·9 × 1·2, 1·85 × 1·2, 1·8 × 1·22, 1·8 × 1·2, 1·87 × 1·25, 1·77 × 1·2. The ground-colour varies from olive-buff to rich cream-buff, the spots and blotches varying from seal- to olive-brown, tawny olive, and blue-grey fading to faint pearl. These markings are sometimes small and distributed more or less generally over the egg, though always more abundant round its larger circumference. In some specimens they are few and large, while in others there is a long confluent blotch round the larger circumference.

26. STERNA ANTARCTICA.

Sterna antarctica, Buller, op. cit. ii. p. 70.

27. STERCORARIUS ANTARCTICUS.

Stercorarius antarcticus, Buller, op. cit. ii. p. 63.

This bird has a very wide distribution:—The Falkland Islands, Kerguelen Land, St. Paul's Rocks, Tristan d'Acunha, Cape of Good Hope, Madagascar, the Crozets, New Zealand, Norfolk Island, the Chatham Islands, Campbell and Macquarie Islands.

The eggs of this bird vary from ovate to cylindrical-ovate in shape. Their ground-colour varies from cream-buff to tawny drab, covered with spots and blotches, more abundant at the thick end and round their greater circumference; the spots vary from umber and olive to fæcal brown or black, interspersed with others of faded lavender. The following are the dimensions of four specimens:—3·02 × 2·12, 3·1 × 2·1, 3·1 × 2·17, 3·0 × 2·1.

28. PORPHYRIO MELANONOTUS.

Porphyrio melanonotus, Buller, op. cit. ii. p. 79.

This Blue Water-hen is still abundant in the larger islands.

29. PORPHYRIO CHATHAMENSIS.

Porphyrio chathamensis, Sharpe, Cat. B. xxiii. p. 202.

Dr. Sharpe has kindly supplied me with the following diagnosis of his new species :—

> "Similis *P. bello*, sed gutture toto nigro, pileo concolore; præpectore saturate cyaneo : tibiis nigris, abdomine imo concoloribus."

"The tints are difficult to describe, but the differences are well seen on comparison with *P. bellus*."

30. ORTYGOMETRA TABUENSIS.

Ortygometra tabuensis, Buller, op. cit. ii. p. 101.

These little Rails frequent the grassy swamps and the dense rush-like terahina-scrub. As they almost never take to flight, they are very rarely seen. We hunted with a dog well trained to the capture of these birds in the grass by running them down; but it was only after a many-hours' hunt that we succeeded in securing a specimen. It was evident from the behaviour of the dog that there was a fair number of birds, but they can move between the stems so fast that they are able to make good their escape in nearly every case of pursuit.

In New Zealand I have had these birds brought in dead but unharmed by our domestic cat. Besides the case recorded by Sir W. Buller, I have known this to occur not unfrequently in different parts of the country. My own cat used to devour in secret birds, rabbits, and hares, which she was very expert in catching, while she would bring in and lay down unharmed on the floor these little Rails.

31. ORTYGOMETRA AFFINIS.

Ortygometra affinis, Buller, op. cit. ii. p. 103.

32. CABALUS DIEFFENBACHI.

Cabalus dieffenbachii, Buller, op. cit. ii. p. 121.

No other than the type-specimen of this species, which is in the British Museum, has ever been met with. "A new kind of Rail," says Dr. Dieffenbach in his paper read before the Royal Geographical Society, "was formerly very common, but since cats and dogs have been introduced it has become very scarce. The natives call the bird *Meriki*, and catch it with nooses. I often heard its short shrill voice in the bush, and after much trouble obtained a living specimen"—which has proved to be the last of its race. The abundance of its remains in the Wharekauri sand-hills indicates that it must have once been very numerous.

This Crake lived on Wharekauri, but its remains, though not uncommon there, have not yet been found elsewhere.

33. Cabalus modestus. (Plate XIV. fig. 4, egg.)

Cabalus modestus, Buller, op. cit. ii. p. 123.

Cabalus dieffenbachii (young), H. O. Forbes, Bull. Brit. Orn. Club, i. p. xx (1892).

Cabalus modestus, H. O. Forbes, Bull. Brit. Orn. Club, i. p. xlvi (1893).

This has been so rare a bird that up till November 1892 only two specimens were known—the type, which has totally disappeared for years, and the example I received at that date from my correspondent, Mr. Hawkins. The plumage of this latter bird was so remarkable that, notwithstanding the opinion of Count Salvadori to the contrary, I could not but believe that it was a young bird, and the young of *Cabalus dieffenbachi*. It was only on the receipt of further specimens that I was convinced that this distinguished ornithologist was quite right and that they were adult birds. They possess "in their adult plumage the exact dress which might have been expected to characterize the young of *C. dieffenbachii*"[*]. "The young ones," writes Mr. Hawkins, "are always the same colour as the old. They nest in holes in the ground, and when the young are hatched they get into fallen hollow trees. They live on insects, principally the sand-hoppers [Crustacea Amphipoda], which travel into the bush here a long way. There is no sand at all on the island [Mangare] where the birds are."

The egg of this bird, of which only one specimen has as yet been discovered, is nearly white, but its Ralline character is indicated by a faint double spotting of grey and rufous. It measures, axis 1·45, and in diameter 1·1.

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[*] R. B. Sharpe, Bull. Brit. Orn. Club, i. p. xlvi.

This species is now confined to the islet of Mangare, where I fear its fate is sealed, owing to the recent introduction of cats into its hitherto foeless home.

Bones referable apparently to this species have, however, been found among the sub-fossil remains in Wharekauri.

34. ARDEA EGRETTA.

Ardea egretta, Buller, op. cit. ii. p. 124.

This bird was at one time abundant, I was told, on the islands of this group; but it has become, if not absolutely extinct, extremely rare. Just before my visit (in 1892) a pair had arrived in a very exhausted condition, and fell a prey in a few days to the gun of a native. My correspondent, Mr. Hawkins, tells me that two pairs have arrived on Wharekauri (the main island) since my visit. This bird is now rare on New Zealand itself; but as it has a very wide range, it is not easy to discover from what land the few examples that have arrived recently have come.

35. BOTAURUS PŒCILOPTILUS.

Botaurus pœciloptilus, Buller, op. cit. ii. p. 141.

The Maoriori name for this bird is *Matuku.*

36. PHALACROCORAX NOVÆ-HOLLANDIÆ.

Phalacrocorax novæ-hollandiæ, Buller, op. cit. ii. p. 145.

37. PHALACROCORAX BREVIROSTRIS.

Phalacrocorax brevirostris, Buller, op. cit. ii. p. 168.

38. PHALACROCORAX FEATHERSTONI.

Graculus africanus, Hutton, Tr. N.Z. Inst. v. p. 224 (1872).

Phalacrocorax featherstoni, Buller, op. cit. ii. p. 166.

The eggs of this species are in colour and shape similar to those of *P. rothschildi.* In size they vary slightly: 2·25 × 1·35, 2·25 × 1·40, 2·30 × 1·50, 2·40 × 1·50.

39. PHALACROCORAX ONSLOWI, sp. n.

Phalacrocorax imperialis, Buller, op. cit. ii. p. 153.

Phalacrocorax cirrhatus, Hutton, Tr. N.Z. Inst. xi. p. 336 (1879).

In his 'Birds of New Zealand,' Sir Walter Buller, in both editions, describes and figures the same species of Cormorant from the Chatham Islands—in the first edition under the name of *P. carunculatus*, and in the second under *P. imperialis*. *P. imperialis* was first described by Captain King on his return from the Straits of Magellan, where he discovered the species. His account specifies that his bird was a crested Cormorant, with the hind neck and the upper surface of the body deep purple; wings and scapulars greenish black; remiges and rectrices (of which there were 12) fuscous black; the underside of the body, the alar bars, and a spot in the middle of the back greyish white; the beak black and the feet yellow. Now this description agrees, with the exception of the crest, with the specimens more recently brought from the Straits of Magellan, now in the British Museum. Of these, one was brought back by the 'Challenger,' and was figured as *P. imperialis* by Mr. Sclater in his Report on the 'Challenger' Birds, p. 120, pl. xxv. No one who compares the figures I have referred to can for a moment doubt their distinctness. The figure in the second edition of Sir Walter Buller's 'History' clearly shows how inefficient chromolithography is to represent the coloration of certain species of birds. The figures in both editions have been prepared, it appears, from the same specimen, and yet they are scarcely recognizable as of the same bird. The crest in the figure of the first edition is steel-blue with a slight tinge of green, and the neck and back steel-blue, whereas in the chromolithographed plate in the second edition there is no sign of blue, only bright green; yet the description states that these parts are "steel-blue, with a beautiful gloss." It will be apparent on comparing Mr. Sclater's figure of *P. imperialis* with the better of Sir Walter Buller's two figures, that is of *P. carunculatus* in the first edition of his book (which is = *P. imperialis* of the second edition), that the dark feathering in the former commences opposite or just under the eye, and then continues backward to the hind neck, while in the latter it commences at the lower edge of the mandibles, and then retreats toward the hind neck, covering, however, much more of the sides of the neck than in *P. imperialis*. The naked skin in front of and round the eye in the two species is also totally distinct, being bright orange in the Chatham-

Island and gamboge-green in the Magellan birds. Sir Walter's description of *P. imperialis* also conflicts with itself in several points. In describing the young of this Chatham-Island bird he says "lower back and rump glossed with steel-blue *instead of green* as in the adult," and "there is likewise a blue gloss intermixed *with the green* on the head and hind neck"; whereas his words in describing the adult on the same page are: "back, rump, thighs, and upper tail-coverts dark purplish or steel-blue," and "head, including the crest, cheeks, hind part and sides of neck . . . dark purplish or steel-blue with a beautiful gloss."

The mid-line of the gular region in the Chatham-Island bird is plumose, while in the S.-American form it is not so. The bird from the former locality is also described in the work cited as "having the feathers composing the alar bar largely tipped with white," while in the latter the bar is formed of a line of white feathers in the wing-coverts.

From the fact that in some birds in mature and splendid plumage there occurs either no dorsal spot or no alar bar, and that in others both alar bar and dorsal spot are wanting, I am very strongly of opinion that both these characters are neither sexual nor seasonal, but truly specific. In the young of those species which ultimately have an alar bar, it appears in the young birds, but at what precise age I am unable to say, as a pale line in the grey of the wing, as may be seen in the young of *Phalacrocorax imperialis* from the Straits of Magellan, in *P. albiventris*, and in *P. rothschildi* (a new species which I describe below) in the collection of the British Museum. Sir Walter Buller states that the young birds of *P. carunculatus* (that is, the New-Zealand bird) in their first year's plumage have no dorsal spot and no alar bar. Both these characters must, therefore, appear after the first year. In none of the specimens of *P. albiventris* in the British Museum which I have examined (and there are some of them quite mature and in magnificent plumage) is there any dorsal spot. Mr. Sclater has pointed out that in none of the examples of *P. verrucosus* is there the slightest appearance of either a dorsal spot or an alar bar, and I have re-examined these specimens and have found this to be so. I therefore believe that the alar bar appears after, perhaps, the first year, and that only after several further moultings does the dorsal patch present itself, increasing in extent with the greater maturity of the bird. The dorsal patch does not occur in its greater extent in *P. rothschildi* till after the bird is fully adult and after it has even bred. In two specimens of this species, both in beautiful feathering, with distinct not antrorsal crests (one more marked than the other) and in breeding plumage, which have been sent to me along with the eggs, the dorsal spot is small and not well developed; in another, obtained by Von Hügel at the Bluff, in the South Island of New Zealand, it is more developed; while in a fourth (from the Chatham Islands) it is still larger, and is accompanied by two scapular patches of white, very similar to those described by Sir Walter Buller as occurring in *P. carunculatus* from New Zealand. In two other immature specimens from the Bluff, from the collection of Von Hügel, this spot is wanting. In all these specimens the alar bar is present. Out of four specimens of *P. imperialis* in the British Museum (three young and one old), all of them have the alar bar and only the mature one the dorsal spot.

There can be little doubt but that almost all Cormorants assume a more ornamental plumage during the breeding-season, and the crest is, I believe it will be found, one of those adornments that appear during that season. Mr. Hawkins writes me in reference to the species now under discussion: "When they pair off for breeding both the males and the females get crests, and as soon as the young can leave the nest the parents lose their crests and become plain and quite ugly. The male and female take turn about at hatching. When making their nests they don't hesitate to rob another nest if the owners are away from home." The examples of *P. imperialis* from the Magellan region have no distinct crest either in the specimen in the British Museum or in that figured by Mr. Sclater; but their coronal feathers are slightly elongated and are *green*, whereas in the

Chatham-Island form the crest, according to Sir W. Buller's text (not his plate in the second edition), is of the same colour as the back and neck, "dark purplish or steel-blue." The carunculations also are developed apparently during the breeding-season. Buller's figure of *P. imperialis* (=*P. onslowi*) has no carunculations, while Sclater's from South America shows them.

As the type of *P. imperialis* of King was a Magellan Straits' specimen, this name must necessarily be retained for the South-American form, so that, if Sir W. Buller is right in separating the New-Zealand from the Chatham-Island birds, under the name of *P. carunculatus,* the bird from the Chatham Islands requires a new name. I have therefore taken the liberty of associating with it that of the Earl of Onslow, to whom ornithologists are deeply indebted for the measures he instituted, when Governor of New Zealand, for the protection of the singular but fast-vanishing avifauna of those islands, as well as on account of the personal interest he has taken in the *Phalacrocoracidæ* of that colony. Mr. F. W. Hutton has proposed to designate the Chatham-Island Crowned Shag as *P. cirrhatus* of Gmelin; but this is inadmissible, if not on other grounds, for the reason that Gmelin's type had 14 rectrices, while *P. imperialis, carunculatus, onslowi, colensoi,* and *rothschildi* all have only 12.

Phalacrocorax onslowi inhabits Rangitutahi, or the Sisters, a few rocky islets to the north of the main island.

40. Phalacrocorax rothschildi, sp. n.

This is a more beautiful species in my estimation than any of the others from the Southern Ocean. At first I was inclined to place it under *P. colensoi* of Buller, but the description given by him in the 2nd edit., vol. ii. p. 161, of his 'Birds of New Zealand,' differs in so many respects from the bird I have received from the Chatham Islands, that I find myself under the necessity of describing it as a new species under the name of *P. rothschildi,* in compliment to the Hon. Walter Rothschild, who has taken so much interest in the birds of the Chatham Islands.

Adult. The feathers on the crown of the head forming a distinct, though not very tall or conspicuous, crest, and on the cheeks and sides of the head, as far back as the posterior end of the rami of the mandible, also elongated, forming a Grebe-like ruff, all rich glossy green. Occiput, head, and lower neck, an interscapular line, back, rump, and thighs very dark purple or deep steel-blue, richly glossed. Shoulders, mantle, and wing-coverts olive-green, the middle wing-coverts white, forming a long and conspicuous alar bar; on the back a squarish patch of white, more or less distinctly divided into two, which appears not to be developed in birds of the first year, but becomes more marked with maturity. I have described above the changes that take place in this species, while speaking of *P. onslowi.* The gular region has a deeply feathered line of white, commencing in front of the level of the eye; this expands slightly under the throat into a white stripe of dense and elongate feathers, separating the green ruff (above spoken of) as far back as the posterior end of the rami of the mandible, where the white stripe expands (in shorter feathers) on the sides of the fore neck and still more on the front of the lower neck, thus constricting the rich blue on the upperside of the lower neck opposite where it begins to change into the green of the mantle. This approximation of the dark feathers of the head is very characteristic; the whole of the rest of the underside is pure white. Bare skin in front of, round the eye, and around the gape, with the carunculations on the sides of the face, orange-red. Bill dark brown. Legs and feet orange. Wing-feathers black, washed with olive-green. Under surface of quills blackish brown. Tail-feathers 12 in number, dull black, with the shafts white at base. Total length 24·5–27·75 inches, wing from flexure 10·5–11, tail 4·75–5, tarsus 2·42.

Under his description of *P. colensoi*, Sir W. Buller observes that "in the British Museum there are two examples (in moulting condition) obtained by Baron A. von Hügel at the Bluff, in the provincial district of Southland," New Zealand. I have examined these two skins as also a third in the same collection, also obtained from the same locality by Von Hügel, and there can be no doubt that they all belong to the same species as that I am now describing from the Chatham Islands. But there can be as little doubt that they do not agree with Sir Walter Buller's description. That author says :—" The adult is similar to *P. carunculatus*, but conspicuously less; it is *without* carunculations; posterior portion of back slightly marked with a white spot. *Crown of the head, shoulders, feathers composing the mantle, wing-coverts, and scapulars bronzy brown*, with a green gloss in certain lights; hind part and sides of neck, lower portion of back, rump, and thighs *blue-black* with a fine metallic gloss." He describes also on the same page a young of *P. colensoi*. His species is described from the Auckland Islands, and, on account of Baron von Hügel's specimens, from the south of New Zealand also. Sir Walter also examined many of the "twenty or more specimens" collected in the Auckland Islands by Mr. Burton, of the Colonial Museum, Wellington, N.Z.

Eggs.—This bird, my correspondent informs me, lays three eggs. In form they vary from ellipso-ovoid to cylindrical ovate. Size: 2·32 x 1·55, 2·37 x 1·52, 2·5 x 1·6, 2·35 x 1·60, 2·3 x 1·5, 2·3 x 1·52, 2·37 x 1·4, 2·45 x 1·52, 2·52 x 1·50. The ground-colour is that of all Cormorants' eggs, milky blue, plastered with patches of cream-coloured chalk.

Of the Cormorants, therefore, in the Southern Seas, having a white underside and a steel-blue hind neck and back, there appear to be eight distinct species, which I may characterize shortly, while on the subject, as follows :—

1. *Phalacrocorax onslowi*, mihi, from the Chatham Islands, has the dark colour of the head commencing along the lower edge of the ramus of the mandible. Face and carunculations orange-red; a line on the gular region plumose; an alar bar and doubtfully a dorsal spot of white, as it is absent in the specimen, though mature and crested, described and figured by Sir W. Buller.
2. *Phalacrocorax carunculatus* (Gm.). New Zealand and S. America. This bird has an alar bar and a dorsal spot of white, a feathered gular pouch, and a patch of white

on the outer scapulars. The naked space round the eyes is greyish brown; the raised orbits of a beautiful blue colour; caruncles orange-yellow. Legs flesh-white at all ages.

3. *Phalacrocorax rothschildi*, mihi. Chatham Islands and south of New Zealand. This species is at once distinguished by the approximation of the dark plumage of the head beneath the throat, leaving a comparatively narrow white stripe between them. White alar bar and dorsal spot. Feathers elongated into a crest on the top of the head, and elongate feathers on the sides of the head and under throat. Bare skin about the face orange-red; plumose line on gular pouch.
4. *Phalacrocorax colensoi*, Buller. Auckland Islands. This species can be separated from *P. rothschildi* by the colour of its upper parts being bronzy brown instead of steel-blue. It has an alar bar and a dorsal spot of white, but the adult has no caruncalations and no crest according to Sir W. Buller.
5. *Phalacrocorax albiventris*, Less. Falkland Islands and Straits of Magellan. In this bird the dark plumage of the head commences opposite the gape; it has no plumose line along the centre of the gular pouch and no dorsal spot of white, but the alar bar is present. There is one specimen in the British Museum Collection, inseparable, so far as I can detect, from *P. albiventris*, which has no alar bar. It may be an individual variety, or turn out to be of a different species, distinguished from *P. albiventris* by the possession of an alar bar.
6. *Phalacrocorax verrucosus*, Cab. Kerguelen Land [and perhaps N. Zealand]. This bird has neither alar bar nor dorsal spot of white, and can be distinguished also by the dark plumage of the head commencing at the underside of the jaw on the inner side of the ramus of the mandible, the dark blue, almost black, plumage of the sides of the head being separated by a short wedge of white. The top and sides of the head blue. No plumose line along the centre of gular pouch.

One of the specimens collected during the Antarctic Expedition, and presented to the British Museum by the Admiralty, bearing the name "*P. carunculatus*, New Zealand," is undoubtedly *P. verrucosus*. I suspect that there is some error as to the locality, and that not improbably it has become dissociated from the other specimens collected at Kerguelen during that voyage, and presented to the Museum by the Admiralty at the same time. The specimen was probably, therefore, from Kerguelen Land, and not from New Zealand.

7. *Phalacrocorax imperialis*, King. Straits of Magellan, Chili, Chiloe Island. This species is distinguishable from *P. onslowi* by the dark plumage of the head arising opposite to, or a little under, the eye, and not intruding on the fore neck. The bare skin about the face gamboge-green. No plumose line on gular pouch. An alar bar and dorsal spot of white present. Figured in the Report of the Birds collected by the 'Challenger,' plate xxv.
8. *Phalacrocorax cirrhatus* (Gm.) has 14 rectrices.

41. DIOMEDEA EXULANS.

Diomedea exulans, Buller, op. cit. ii. p. 189.

The outlying rocky islets off Pitt's and Wharekauri Islands —Pyramid Rock, the Sisters, and the Forty-fours—are some of the chief breeding-places of this species.

The eggs and young are yearly collected in thousands by the Maoris for food-purposes.

42. DIOMEDEA MELANOPHRYS.

Diomedea melanophrys, Buller, op. cit. ii. p. 198.

43. PELECANOIDES URINATRIX.

Pelecanoides urinatrix, Buller, op. cit. ii. p. 207.

Eggs.—These vary in form from oval to nearly round and are more or less pointed at one end; ground-colour white. Dimensions: 1·40 × 1·15, 1·40 × 1·10, 1·50 × 1·10, 1·35 × 1·10, 1·40 × 1·15, 1·30 × 1·10, 1·50 × 1·11, 1·45 × 1·15, 1·30 × 1·10.

44. PELECANOIDES BERARDI.

Pelecanoides berardi, Buller, op. cit. ii. p. 208.

This bird breeds on Pitt's Island.

45. PRION TURTUR.

Prion turtur, Buller, op. cit. ii. p. 209.

46. PRION VITTATUS.

Prion vittatus, Buller, op. cit. ii. p. 212.

Eggs.—Elongate, ellipsoid, and sometimes wider at one end than the other. Dimensions: 2·2 × 1·39, 1·91 × 1·40, 1·80 × 1 30, 1·88 × 1·40. Colour yellowish white.

47. ŒSTRELATA AXILLARIS.

Œstrelata axillaris, Salvin, Bull. Brit. Orn. Club, i. p. xxxiii.

48. OSSIFRAGA GIGANTEA.

Ossifraga gigantea, Buller, op. cit. ii. p. 225.

49. PUFFINUS GRISEUS.

Puffinus griseus, Buller, op. cit. ii. p. 232.

The eggs vary in form from ovate to rotundo-ovate and oblongo-ovate. Colour white. Dimensions: 3·1 × 2·15, 3·2 × 2·0, 2·85 × 1·95, 3·0 × 1·95, 3·2 × 2·0, 2·8 × 2·02, 3·1 × 2·1, 3·1 × 1·9, 2·7 × 1·82, 3·1 × 1·9, 3·02 × 1·9.

50. PELAGODROMA MARINA.

Pelagodroma marina, Buller, op. cit. ii. p. 248.

Eggs.—Elliptical in shape. Dimensions: 1·4 × 1·0, 1·4 × 1·0. Ground-colour white at one end, covered with fine dots of heliotrope-purple and lavender-grey, with a few of seal-brown interspersed, and at the other end sparsely with vinaceous buff. In some specimens the end is thickly dusted over with the finest vinaceous-rufous dots, while on the rest of the egg they are scarcely recognizable.

51. GARRODIA NEREIS. (Plate XIV. fig. 3, egg.)

Garrodia nereis, Buller, op. cit. ii. p. 247.

Egg.—Form short ellipsoid. Dimensions: 1·2 × 1·0. Ground-colour white, on which are a ring of drab-reddish and fine hair-like streaks round one end.

This bird is found both in New Zealand and on the Snares.

52. ANAS SUPERCILIOSA.
Anas superciliosa, Buller, op. cit. ii. p. 251.

53. RHYNCHASPIS VARIEGATA.
Rhynchaspis variegata, Buller, op. cit. ii. p. 269.

54. EUDYPTES PACHYRHYNCHUS.
Eudyptes pachyrhynchus, Buller, op. cit. ii. p. 287.

55. EUDYPTULA MINOR.
Eudyptula minor, Buller, op. cit. ii. p. 300.

The eggs of this bird are rotundo-ovate and of a white colour. In size they are as follows:—2·3 × 1·7, 2·2 × 1·7, 2·2 × 1·7, 2·35 × 1·75, 2·15 × 1·65, 2·15 × 1·70, 2·25 × 1·7.

It will be seen from this list that the birds still existing in the Chatham group are 55 in number, besides two introduced European species (*Alauda arvensis* and *Passer domesticus*). Since the publication of the second edition of Sir Walter Buller's 'History' in 1889, six new species have been discovered there, namely, *Cyanorhamphus forbesi*, *Carpophaga chathamensis*, *Porphyrio chathamensis*, *Phalacrocorax rothschildi*, *P. onslowi*, and *Œstrelata axillaris*. There occur on the Chatham Islands 13 species which, so far as is known, are endemic. Since Dr. Sharpe has relegated the *Ocydromus sylvestris*, Scl., of Lord Howe's Island, to the genus *Cabalus*, the Chatham Islands have been deprived of their sole supposed endemic genus among their living forms. My investigations among the remains of their former, but now extinct, bird-life have brought to light the fact that many other species, some of them well-known New-Zealand birds, were once abundant in these islands. It may be interesting to enumerate the extinct species so far identified.

List of Extinct Species.

[1.] PALÆOCORAX MORIORUM, Forbes.
Palæocorax moriorum, H. O. Forbes, 'Nature,' vol. xlvi. p. 252; Bull. B. O. C. i. p. xxi.

This aberrant Raven seems to have also occurred in New Zealand, associated with a smaller species on the North Island, for which I propose the name of *P. antipodum*.

[2.] NESTOR NOTABILIS, Gould.

Portions of the skeleton sufficient to identify the occurrence of this species have been found.

[3.] NESTOR MERIDIONALIS, Gm.

The same remark applies here. Mr. A. Shand, a gentleman who was born in Wharekauri, and a good observer, and Tapu, an aged Moriori, informed me that the Kakapo, *Stringops habroptilus*, occupied, in the early days of the Settlement, various parts of Wharekauri in considerable numbers, and both remember their burrows, though the former cannot recall having himself seen the birds. I did not, however, succeed in finding any of their remains, nor has my correspondent, Mr. Hawkins, been more successful.

[4.] SCELOGLAUX ALBOFACIES (Gm.).

Portions of the skeleton of several specimens.

[5.] HARPA NOVÆ-ZEALANDIÆ (Gm.).

[6.] HARPA FEROX, Peale.

[7.] COLUMBA, sp.

I have not yet been able to assign the crania of a Pigeon that I have received to any known species.

[8.] CABALUS DIEFFENBACHI (Gray).

The remains of this bird are sufficiently abundant to show that it must have been once quite common.

[9.] CABALUS MODESTUS, Hutton.

I have obtained sub-fossil remains from Wharekauri. This is the species I have designated as *Ocydromus pygmæus* in 'Nature,' vol. xlvi. p. 252.

[10.] PALÆOLIMNAS (gen. nov.) NEWTONI, Milne-Edwards.

This is the bird I have elsewhere ['Nature,' xlvi. p. 252] referred to under the name of *Fulica newtoni*. The limb-bones and pelves correspond so closely to those of *F. newtoni*, from Mauritius, that I have not been able to separate them.

The head of the type is, however, unknown. Among the bones from the Chatham Islands, collected by myself, were several heads which I was unable to allocate to any known genus. Of these I have recently received additional specimens, and I have been able to decide that they belong to the bird the limb-bones and pelves of which I had identified as belonging to *Fulica newtoni*. They indicate a form of Rail so aberrant that they must be removed from the genus *Fulica*. The most remarkable points in the structure of the skull are its extraordinarily curved form, the deeply marked glandular impressions over the eyes, and the great pneumaticity of the frontal bones.

Remains of a species, if not the same a very closely related one, have been discovered by Mr. A. Hamilton in New Zealand in the cave in Otago, whence he obtained some remarkably complete skeletons of *Aptornis* (of which a specimen has lately been acquired for the Geological Department of the British Museum) associated with remains of *Stringops*, *Notornis*, *Dinornis*, *Harpagornis*, and other, now vanished, species of its bird-fauna.

[11.] APHANAPTERYX HAWKINSI, Forbes.

Aphanapteryx hawkinsi, H. O. Forbes, 'Nature,' vol. xlvi. p. 252; Bull. B. O. C. i. p. l.

This bird must have been abundant at one time in Wharekauri, to which island it was apparently confined.

[12.] OCYDROMUS ?AUSTRALIS, Sparrm.

One or two bones which occur in the collection apparently belong to this species.

[13.] GALLINAGO CHATHAMICA, sp. n.

A very much larger species than *G. pusilla*. The bill is 3 inches in length.

[14.] HÆMATOPUS UNICOLOR, Wagl.

[15.] CHENOPIS SUMNERENSIS, Forbes.

This is the same species as I discovered in the Sumner Cave in New Zealand (*cf.* Trans. N.Z. Inst. xxiv. p. 188). It must have been enormously common on Wharekauri.

[16.] ANAS sp. inc.

[17.] FULIGULA NOVÆ-ZEALANDIÆ (Gm.).

EXPLANATION OF THE PLATES.

Plate XIV.

Figs. 1, 2. Egg of *Gallinago pusilla*, p. 529.
3. Egg of *Garrodia nereis*, p. 542.
4. Egg of *Cabalus modestus*, p. 532.
5, 6. Egg of *Thinornis novæ-zealandiæ*, p. 528.

Plate XV.

Fig 1. Young of *Gallinago pusilla*, p. 529.
2. Young of *Thinornis novæ-zealandiæ*, p. 528.

XLVIII.—*Bornean Notes.* By R. Bowdler Sharpe, LL.D., F.L.S., &c.

The following notes embody my observations on several collections from Sarawak and Northern Borneo, submitted to me by Mr. Charles Hose, Mr. A. H. Everett, and Mr. Edward Bartlett, the Curator of the Sarawak Museum.

I have divided these notes into the following headings:—

I. First List of Birds from Mt. Kalulong, in Sarawak: p. 546.
II. A List of the Birds collected by Mr. A. H. Everett on Mt. Penrisen and Mt. Poch, in Sarawak: p. 550.
III. Description of a new *Spilornis* from Borneo: p. 552.
IV. A Note on the *Baza* of Borneo: p. 553.
V. Notes on Mr. A. H. Everett's Collections of Birds from Northern Borneo and Sarawak: p. 559.
VI. Additions to the Avifauna of Mount Kina Balu: p. 560.
VII. Description of the Nest and Eggs of *Staphidia everetti*: p. 563.

I. *First List of Birds from Mt. Kalulong, in Sarawak.*

A small collection of birds from Mt. Kalulong has recently been made for Mr. Charles Hose by his hunters. The present paper can be regarded only as a preliminary list of the avifauna of the mountain, as no altitudes have been marked by the native hunters, and it is evident that they have not as yet collected at any great height. It will be seen that some of the peculiar Kina Balu forms occur on Kalulong also.

The following is a complete list of the species in the collection. The nomenclature used is that of Mr. Everett (Journ. Straits Branch R. Asiatic Soc. 1889, p. 91), unless the contrary is stated.

Trichixus pyrrhopygus.
Hydrocichla ruficapilla.
Pomatorhinus borneensis.
Stachyris poliocephala.
—— leucotis.
—— maculata.
Cyanoderma bicolor.
Malacopterum cinereum.
—— magnum.
—— affine.
Alcippe cinerea.
Staphidia everetti.
Macronus ptilosus.
Turdinus canicapillus.
—— atrigularis.
—— kalulongæ, sp. nov.
—— tephrops, sp. nov.
Drymocataphus capistratoides.
Ptilopyga leucogrammica.
Anuropsis malaccensis.
Turdinulus exsul.
Iole olivacea.
Hemixus malaccensis.
—— connectens.
Criniger diardi.
—— gutturalis.
—— ruficrissus.
—— finschi.
Tricophoropsis typus.
Pycnonotus simplex.
—— salvadorii.
Rubigula weberi.
—— paroticalis.
Ægithina viridissima.
Chloropsis zosterops.
Irena criniger.
Oriolus xanthonotus.
Dissemurus platurus.
Lalage culminata.
Xanthopygia cyanomelæna.
Hypothymis occipitalis.
Rhipidura perlata.
Terpsiphone affinis.
Philentoma velatum.
—— pyrrhopterum.
Rhinomyias ruficrissa.
Siphia everetti, *Sharpe* [*].
—— beccariana.
—— nigrigularis, *Everett* [†].
Æthopyga temmincki.
Anthothreptes phœnicotis.
Arachnothera juliæ.
—— modesta.
—— longirostris.
Arachnoraphis robusta.
Prionochilus xanthopygius.
Platylophus coronatus.
Pitta arcuata.
Eucichla schwaneri.
Calyptomena hosii.
Buceros rhinoceros.
Rhytidoceros undulatus.
Anorrhinus galeritus.
Berenicornis comatus.
Nyctiornis amicta.
Harpactes duvauceli.
—— kasumba.
—— erythrocephalus.
Megalæma chrysopsis.
—— mystacophanes.
Mesobucco duvauceli.
—— eximius, *Sharpe* [‡].
Caloramphus fuliginosus.
Rhinortha chlorophæa.

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[*] Ibis, 1890, p. 366.

[†] Ibis, 1891, p. 45.

[‡] Ibis, 1892, pp. 324, 441.

Urococcyx erythrognathus.
Glaucidium borneense, sp. nov.
Calyptomena viridis.
Eurylæmus ochromelas.
Cymborhynchus macrorhynchus.
Corydon sumatranus.
Xylolepes validus.
Hemicercus sordidus.
Lepocestes porphyromelas.
Chrysophlegma malaccense.
—— humii.
Gauropicoides rafflesii.
Miglyptes grammithorax.
—— tukki.
Micropternus badiosus.
Ceyx euerythra, *Sharpe*[*].
Halcyon concreta.
Carcineutes melanops.
Zanclostomus javanicus.
Carpococcyx radiatus.
Palæornis longicauda.
Loriculus galgulus.
Treron vernans.
Ptilopus jambu.
Lobiophasis bulweri.

The following notes relate to some of these species.

HYDROCICHLA RUPICAPILLA (T.): Everett, t. c. p. 101.

Mr. Hume has shown the distinctions between the sexes of this species (Str. Feath. vi. p. 361), and the observations of Count Salvadori as to the invalidity of my species, *H. rufidorsalis* (Sharpe, Ibis 1879, p. 255), are fully borne out by the series of specimens now in the Museum.

Mr. Hose's collection from Kalulong contains a fine adult male with the black back, and a young bird, said to be a male. This young bird has the markings of the adult, but the rufous colour of the head and back is much obscured and more dingy, the black of the back overwashed with rufous.

TURDINUS KALULONGÆ.

Similis *T. magnirostri*, sed pileo infuscato, gutture imo et præpectore toto cinereis minime striolatis, distinguendus. Long. tot. 6 poll., culm. 0·65, alæ 3·3, caudæ 2·8, tarsi 0·8.

Two specimens are in Mr. Hose's collection and I have compared them with a large series of *T. magnirostris* from the Hume collection. They are easily distinguished by their dusky grey head, which contrasts with the brown back, whereas in *T. magnirostris* the crown is brown like the back. There is a little blackish patch on the chin, which causes the pure white of the throat to stand out in bold relief against the grey of the lower throat and fore neck, these parts, moreover, not showing any of the dusky streaks which are a constant feature in *T. magnirostris.*

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[*] Cat. B. xvii p. 179.

TURDINUS TEPHROPS.

Similis *T. sepiario,* sed pileo saturate griseo, haud dorso concolore, hypochondriis et subcaudalibus læte cervinis, et gutture imo et præpectore cinereo striatis distinguendus. Long. tot. 5·2, culm. 0·8, alæ 3·0, caudæ 1·55, tarsi 1·1.

This species is like *T. sepiarius* on the upper surface, but has a dark head contrasting with the back, and is easily distinguished by its having buff flanks and under tail-coverts, as well as by the grey streaks on the throat. On the other hand, the tawny colour on the underparts allies the Kalulong bird to *T. abbotti,* but it is distinguished from the latter by its dusky cap and by the grey streaks on the fore neck.

CALYPTOMENA HOSII, Sharpe.

The young male differs from the adult only in having the blue on the breast less bright and less extended. The black markings on the upper surface are also present, whereas in the females they are absent on the nape and hind neck; at least this is the case with the birds now sent from Kalulong.

GLAUCIDIUM BORNEENSE.

G. simile *G. brodiei* et *G. sylvatico,* sed ab ambobus fascia cervicali alba distinguendum. Long. tot. 6·0 poll., culm. 0·55, alæ 3·65, caudæ 1·9, tarsi 0·8.

Mr. Hose has sent in his collection an adult of this species from Mt. Kalulong, and Mr. Everett has forwarded a young male from the Kinokok Valley on Mount Kina Balu.

I have compared these two specimens with the fine series of *G. brodiei* which we have in the British Museum from the Hume collection, and I cannot match them with any of our large series. We have no specimen which combines a grey head, a white neck-collar, and a dark back of rufous brown. Nearly every one of the adults from Tenasserim and from the Eastern Himalayas has a greyish back, not unlike the head in tint, and the back is ochreous. Of course I am not alluding to the spots and bars which occur in all adult birds, but to the general tone of the coloration. I may remark that *Glaucidium pardalotum* of Swinhoe, from Formosa, is certainly not to be distinguished from true *G. brodiei*, now that we have a better series with which to compare it, instead of the meagre one which was at my disposal when I wrote the second volume of the 'Catalogue of Birds.'

Of course it is just possible that the Bornean species may turn out to be identical with the Sumatran *G. sylvaticum* (Bp.), but this also seems to have an ochreous neck-collar (*cf.* Sharpe, Cat. B. ii. p. 215).

II. *A List of the Birds collected by Mr. A. H. Everett on Mt. Penrisen and Mt. Poeh, in Sarawak.*

Mr. Everett has also explored Mount Penrisen and the adjacent hills, and his collectors have obtained some examples of interesting species, a list of which will be of use.

Myiophoneus borneensis. Penrisen Mt., June.
Hydrocichla ruficapilla. Penrisen Hills; Poeh Mt., 3500 feet.
Orthotomus ruficeps. Perisen Mt.; Poeh Mt.
—— *cineraceus.* Poeh Mt., 4000 feet.
Burnesia superciliaris. Poeh River; Penrisen Mt.
Pomatorhinus borneensis. Penrisen Mt.; Poeh Mt., 4500 feet.
Stachyris leucotis. Penrisen Hills; Poeh Mt.
—— *borneensis.* Penrisen Mt.; Poeh Mt., 4000 feet.
Cyanoderma bicolor. Poeh Mt., 4800 feet.
Malacopterum cinereum. Penrisen Mt.
Alcippe cinerea. Penrisen Mt.; Penrisen Hills; Poeh Mt., 3000 feet.
(The specimen from Mt. Poeh is rather greyer on the head than examples from other localities, and has faint grey streaks on the throat.)
Herpornis brunnescens. Penrisen Mt.; Poeh Mt.
Staphidia everetti. Poeh Mt., 4000 4600 feet.
Turdinus canicapillus. Penrisen Mt.; Poeh Mt., 4000 feet.
—— *atrigularis.* Penrisen Mt.; Poeh Mt., 4000 feet.
Trichostoma rostratum. Penrisen Mt.
Eupetes macrocercus, Sharpe, Ibis, 1890, p. 367. Penrisen Mt.
Anuropsis malaccensis. Penrisen Hills.
Turdinulus exsul. Penrisen Mt.; Poeh Mt., 4000 feet.
Iole olivacea. Penrisen Mt.
Hemixus malaccensis. Penrisen Mt.
—— *connectens.* Penrisen Mt.; Poeh Mt., 4000-4800 feet

Criniger diardi. Poeh Mt., 3500–4000 feet.
—— *gutturalis.* Penrisen Mt.
—— *ruficrissus.* Penrisen Mt.; Poeh Mt., 4800 feet.
—— *finschi.* Penrisen Mt.
Pycnonotus simplex. Penrisen Mt.; Poeh Mt.
—— *salvadorii.* Poeh Mt., 3500 feet.
Rubigula weberi. Penrisen Hills.
—— *paroticalis.* Penrisen Hills.
Chloropsis zosterops. Penrisen Mt.
—— *viridinucha.* Penrisen Mt.; Poeh Mt.
—— *kinabaluensis.* Penrisen Mt.
Dendrophila corallipes. Penrisen Mt.
Pteruthius æralatus. Poeh Mt., 4500 feet.
Pityriasis gymnocephala. Poeh Mt.
Hyloterpe grisola. Poeh Mt.
—— *whiteheadi.* Poeh Mt., 4000 feet.
Hemipus obscurus. Penrisen Mt.
—— *picatus.* Penrisen Mt.; Poeh Mt., 4000 feet.
Buchanga stigmatops. Penrisen Hills; Poeh Mt., 4000–4500 feet.
Pericrocotus xanthogaster. Penrisen Mt.; Poeh Mt., 4000–4500 feet.
Muscicapula hyperythra. Poeh Mt., 4000 feet.
Erythromyias muelleri. Penrisen Hills; Poeh Mt., 4000–4500 feet.
Rhipidura perlata. Penrisen Hills.
Terpsiphone affinis. Penrisen Hills.
Philentoma velatum. Poeh Mt., 4000 feet.
—— *pyrrhopterum.* Penrisen Hills; Poeh Mt., 4000 feet.
Rhinomyias pectoralis. Poeh Mt.; Penrisen Mt.
—— *gularis.* Poeh Mt., 4000 feet.
—— *ruficrissa.* Penrisen Hills.
Culicicapa ceylonensis. Penrisen Hills.; Poeh Mt., 3000 feet.
Cryptolopha schwaneri. Penrisen Mt.; Poeh Mt., 4000 feet.
Siphia beccariana. Penrisen Hills, 900 feet.
—— *everetti,* Sharpe, Ibis, 1890, p. 366. Poeh Mt., 4500 feet. (Described from Penrisen.)
—— *nigrigularis,* Everett, Ibis, 1891, p. 45. Penrisen Mt.
—— *turcosa.* Penrisen Hills.
Æthopyga temmincki. Penrisen Mt.; Poeh Mt., 4000 feet.
Cinnyris pectoralis. Poeh Mt.
Anthothreptes hypogrammica. Penrisen Mt.
—— *simplex.* Penrisen Mt.
—— *phœnicotis.* Poeh Mt.
Arachnothera modesta. Penrisen Mt.
—— *longirostris.* Penrisen Mt.
Dicæum monticola. Penrisen Mt.
—— *trigonostigma.* Penrisen Mt.

Dicæum chrysorrhæum. Poeh Mt.
Prionochilus xanthopygius. Penrisen Mt.
Zosterops squamifrons, Sharpe, Ibis, 1892, p. 323. Penrisen Mt., 3500 feet.
—— *aureiventer.* Penrisen Mt.; Poeh Mt.
Munia fuscans. Foot of Poeh Mt.
Pitta arcuata. Penrisen Hills; Poeh Mt., 4000 feet.
—— *baudi.* Poeh Mt.
Chætura coracina. Poeh Mt.
Collocalia linchi. Poeh Mt.
Chrysophlegma humii. Poeh Mt., 4000–4500 feet.
Gecinus puniceus. Poeh Mt., 4000 feet.
Harpactes diardi. Poeh Mt., 4000 feet.
Megalæma chrysopsis. Poeh Mt., 4000 feet.
Mesobucco duvauceli. Penrisen Mt.
—— *eximius*, Sharpe, Ibis, 1892, p. 324. Penrisen Mt.
Rhamphococcyx erythrognathus. Poeh Mt.
Zanclostomus javanicus. Poeh Mt., 4000 feet.
Loriculus galgulus. Penrisen Mt.
Rhizothera longirostris. Penrisen Mt.
Melanoperdix nigra. Poeh River.
Rallina fasciata. Poeh Mt.

III. *Description of a new* Spilornis *from Borneo.*

Among the birds submitted to me by Mr. Edward Bartlett for identification is a specimen of a *Spilornis* obtained near Kuching on the 10th of June, 1892. On comparing it, I find that it is a representative of the rufous-chested group of the genus, hitherto known only from Celebes and the Sula Islands, viz. *Spilornis rufipectus* and *S. sulaensis* (*cf.* Cat. B. i. pp. 291, 292). I think, however, that it must be considered to be distinct from both these species. From *S. rufipectus* it differs in being much more closely banded underneath, *S. rufipectus* being broadly banded and spotted with white below. The tint of rufous on the chest is about the same as that of *S. rufipectus*, and is not so pale as that of *S. sulaensis*, to which, however, the Kuching bird bears a greater general resemblance. It may be diagnosed as follows:—

SPILORNIS RAJA, sp. nov.

Similis *S. sulaensi*, sed fasciis albidis pectoralibus et abdominalibus et axillarium valde crebrioribus distinguendus. Long. tot. 18·5 poll., alæ 12·2, caudæ 7·0, tarsi 3·25.

Nearly adult. General colour above brown, with a slight purplish gloss, all the feathers margined with pale rufous on the hind neck and mantle, and with whitish on the rest of the upper surface of the body, including the wing-coverts; bastard-wing and primary-coverts and outer primaries black, tipped with white; rest of primaries blackish brown on inner web, all tipped with white and banded across with black, these black bands more conspicuous on the secondaries, which have the base of the feathers much broken up with white; tail-feathers black, tipped with white, crossed by two bands of equal width, a subterminal one of black preceded by a brown band, much broken up with white; crown of head and crest-feathers black, tipped with pale sandy colour, the forehead and eyebrow decidedly whiter; ear-coverts ashy grey, black posteriorly; cheeks and throat white, with a few dusky streaks on the latter; lower throat, fore neck, and chest dark tawny rufous; remainder of under surface from the breast downwards thickly barred with white arranged in twin spots or bars, the corresponding bands being pale rufous—these bands inclining to dusky brown on many of the flank-feathers, the dusky bars being very much narrower on the thighs and under tail-coverts; under wing-coverts and quill-lining white, with an irregular patch of rufescent and dusky bars on the former; the axillaries pale rufous, with large twin spots of white; quills ashy below, whitish at base, the black bands showing very distinctly.

Hab. Kuching, Sarawak.

Amongst other interesting birds from the neighbourhood of Kuching sent by Mr. Bartlett are specimens of *Lyncornis temmincki, Prionochilus everetti,* and *Cuculus micropterus.*

IV. *A Note on the* Baza *of Borneo.*

Mr. Edward Bartlett has also submitted to me for examination three skins of a *Baza* from Borneo, which are the first of this genus that I have ever had in my hands from that island. These specimens were all procured in the

Baram district by my friend Mr. C. Hose, and were added to the Sarawak Museum, which has a fine set of Mr. Hose's collections.

The history of *Baza* in Borneo is very simple, the first recorded occurrence in the island being a female bird procured by Diard near Pontianak and recorded by Schlegel in his 'Museum des Pays-Bas' as *Baza reinwardti* (Pernes, p. 6). In the 'Accipitres' of the 'Oiseaux des Indes Néerlandaises,' this same specimen is figured (pl. 28. fig. 5) as the young of *Baza magnirostris.* Salvadori (Ucc. Born. p. 11) united the Bornean species to *Baza jerdoni* (Blyth), and considered *B. sumatrensis,* Lafr., to be the same. In my 'Catalogue of Birds' (vol. i. p. 358) I united *Baza jerdoni* of Blyth to *B. reinwardti,* and I figured *B. sumatrensis* (pl. xi. fig. 1). In 1876 Dr. Brüggemann (Abhandl. nat. Ver. Bremen, v. p. 47) applied the name of *B. borneensis* to the Bornean bird.

In 1875 Mr. Hume (Str. F. iii. p. 313) described very fully some specimens of *Baza,* one from Native Sikhim and the other from Southern Tenasserim, and suggested the name *Baza incognita* for them, though he stated the probability of their being identical with the *Baza sumatrensis* of my 'Catalogue.'

The receipt of the three specimens from the Sarawak Museum goes far to clear up the difficulties connected with the above-mentioned identifications, but the specimens of *Baza* are so rare in collections that even now the series before me is meagre enough, though it contains the types of *Baza incognita* and *B. magnirostris.* One thing is quite evident, viz. that the possession of white tips to the crest-feathers merely indicates immaturity, a further sign of which is the white or pallid margins to the wing-coverts and the number of dark bars on the tail. In this latter character *Baza* follows *Pernis,* and the bands on the tail decrease to three in the adults and are four in number in the young.

My characters for *B. sumatrensis* in the 'Catalogue' are those of a young bird, and the absence of the throat-stripe is also a sign of immaturity. Thus the 'Key' to the genus *Baza* of the 'Catalogue' requires revision, as follows:—

c″. Throat white or buff, washed slightly with rufous, and showing a distinct central streak.
  c‴. Fore neck uniform grey.............. *magnirostris*, p. 556.
  d‴. Fore neck broadly streaked, with tawny buff or black.
    a^4. Streaks on fore neck and chest black; bands on flanks deep rufous brown; entire under surface of body with a deep tawny tinge .... *borneensis*, p. 557.
    b^4. Streaks on fore-neck and chest pale cinnamon rufous.................. { *jerdoni*, p. 557. *ceylonensis*, p. 556.

The confusion concerning the two British-Museum specimens of *Baza magnirostris* may now be considered as dissipated, but the circumstances require some explanation. When I wrote the 'Catalogue of Birds' I followed Gray's published 'List of Accipitres,' 2nd edition, 1848, apparently without going back to the registers—a somewhat rash proceeding, as I have learnt from subsequent experience. All the Accipitres were mounted in 1872, when I began to write the first volume of the 'Catalogue,' and one of my first duties was to unmount and place in the skin-collection all specimens of historical value, in which case the information on the stands was transferred to the labels on the skins when unmounted. Thus the two specimens of *Baza magnirostris*, entered on p. 41 of the 'List of Accipitres,' were transferred to the skin-collection and catalogued (*op. cit.* p. 356) as an adult male and young female, the former being figured. Soon after I seem to have had some doubts as to the identification of the female, as Colonel Legge states that I informed him that it was probably *Baza jerdoni*, when he wrote his work on the 'Birds of Ceylon.'

Having now to go into the whole matter again, I have examined the original register of Cuming's collection, and I find that in February 1842 245 specimens were purchased of Mr. Cuming, of which about 70 skins were from Malacca and the bulk from the Philippines. No. 121, the type of *Baza magnirostris*, is registered "June, Island of Manilla, South"!! Therefore, although no one has since discovered a *Baza* in Luzon, it is quite possible that this species will be found to be confined to that island.

No. 163. *Baza lophotes*, ♂. Malacca.

Then follows a note:—"Exchanged with Mr. Gurney, of Norwich, 15th Dec. 1853."

No. 164. *Baza lophotes*, ♀. Malacca.

The specimen which bears this register still is the example of *Baza jerdoni* which did duty in Gray's 'List' and in the 'Catalogue' for the young female of *B. magnirostris*.

In this same list one specimen of *B. lophotes* from Malacca is recorded, but it is quite evident that there were *two*, because, besides the one given to Mr. Gurney in exchange, there was another, mounted in the gallery and recorded by me (Cat. B. i. p. 353, sp. *d*), and this specimen is in the Museum still. It bore, however, no register number, and had no doubt been confused by Mr. G. R. Gray with the female *B. jerdoni*, or *vice versâ*.

The synonymy of the allied species will thus have to be modified as follows:—

1. BAZA MAGNIROSTIS (Kaup).

Baza magnirostris, Gray, List Accipitr. Brit. Mus. p. 19 (1844: nomen nudum); Strickl. Orn. Syn. p. 127 (1855); Gray, Hand-l. B. i. p. 25, no. 230 (1869); Sharpe, Cat. B. i. p. 356, pl. x. fig. 1 (1874, pt.).

Hytiopus magnirostris, Kaup, Isis, 1847, p. 343 (ex Gray: descr. prim.).

Aviceda magnirostris, Bp. Consp. i. p. 20 (1850); id. Rev. et Mag. de Zool. 1854, p. 535.

Pernis crassirostris, Kaup, Isis, 1847, p. 339; id. Contr. Orn. 1850, p. 77.

2. BAZA CEYLONENSIS.

Baza ceylonensis, Legge, Str. F. iv. p. 247 (1876); Whyte, Str. F. v. p. 202 (1877); Legge, B. Ceylon, p. 94, pl. iii. (1879); Hume, Str. F. vii. p. 151 (1878: Wynaad).

Apparently a form closely allied to *Baza magnirostris*, with a grey chest in the adult. According to Legge it is known from the Central Province Sub-ranges of Ceylon, and a young bird has been procured by Mr. Darling in the Wynaad.

3. Baza jerdoni.

Lophastur jerdoni, Blyth, J. A. S. Beng. xi. p. 464 (1842), xv. p. 4 (1846).

Falco (*Lophotes*) *reinwardti,* Müll. & Schl. Verh. nat. Gesch., Aves, p. 35 (1839–44, pt.).

Pernis jerdoni, Gray, Gen. B. i. p. 24 (1845).

Aviceda sumatrensis, Lafr. Rev. Zool. 1848, p. 210.

Baza sumatrensis, Gray, Gen. B. iii. App. p. 2 (1849); Wall. Ibis, 1868, p. 18; Gray, Hand-l. B. i. p. 25, no. 232 (1869); Sharpe, Cat. B. i. p. 357, pl. xi. fig. 1 (1874); Hume, Str. F. iii. p. 313 (1876); id. & Davison, Str. F. vi. p. 25 (1878).

Baza incognita, Hume, Str. F. iii. p. 314 (1875: Native Sikhim, S. Tenasserim).

4. Baza borneensis.

Baza reinwardti, Schl. Mus. Pays-Bas, Pernes, p. 5 (1862, pt.).

Baza magnirostris, pt. Schl. Ois. Ind. Néerl., Accipitr. p. 75, pl. 28. fig. 5; id. Mus. Pays-Bas, Accipitres, p. 135 (1873).

Baza jerdonii (nec (Blyth), Salvad. Ucc. Born. p. 11 (1874).

Baza borneensis, Brüggem. Abhandl. nat. Ver. Bremen, v. p. 47 (1878, descr. nulla).

I have adopted Dr. Brüggemann's name for this species, though he seems to have suggested it without the least acquaintance with it. As, however, the title has been placed on record, I describe the species under Brüggemann's name. I may add my belief that, when a large series of *B. borneensis* and *B. jerdoni* are available for comparison, the former bird will not be distinguishable from the latter. The adult bird from Malacca is almost identical with the two adult birds from Borneo, but the latter have browner and less rufous bars on the flanks.

I add a description of *B. borneensis.*

Adult male. General colour above dark brown, all the feathers being ashy brown, with a broad ending of blackish brown, which is slightly glossed with purple; hinder neck and mantle more rufescent, the feathers having black centres and rather broad rufous margins; wing-coverts like the back, with the same blackish ends to the feathers, the median and greater series pale rufous at the ends, the greater coverts glossed with bronzy brown and with indications of two blackish bars, the second one subterminal, so that the greater coverts resemble the secondaries; bastard-wing and primary-coverts black; quills brown, with purplish-black bands, four in number, the subterminal one broader with a whity-brown margin; tail earthy brown, with a narrow tip of the same colour and crossed with three black bands, the sub-terminal one very broad; crown of head black, with a long occipital crest of black feathers, with remains of small whitish tips; the base of the forehead and eyebrow rufous brown; lores and eyelid black; sides of face and sides of neck dull rufous; ear-coverts washed with grey; throat white, as also the chest, the feathers having more or less rufous on their edges and centred with a triangular patch of black, the throat with a mesial line of black; the lower breast and abdomen buffy white, broadly barred with pale rufous, these bars much broader on the flank-feathers and inclining to dark brown, the light bars being correspondingly narrow and in fact almost disappearing on some of the feathers; axillaries like the lower flanks and similarly barred; thighs nearly uniform white, with a few reddish spots; under wing-coverts rufous, with paler edges to the feathers; quills ashy below, white at the base, with the black bands strongly indicated. Total length 18 inches, culmen 1·05, wing 11·5, tail 7·5, tarsus 1·45.

A second specimen, which is a male, is still more rufous about the head, throat, neck, and chest, having the black throat-stripe and the black streaks on the fore neck very strongly developed, while the rufous-brown bars on the flanks are exceedingly strongly marked. Total length 18 inches, culmen 1, wing 12, tail 7·9, tarsus 1·55.

V. *Notes on Mr. A. H. Everett's Collections of Birds from Northern Borneo and Sarawak.*

Among the collections recently sent home by my friend Mr. A. H. Everett there are several species deserving of notice, and one or two new to the Avifauna of Borneo.

1. Falco communis, Gm.: Everett, J. R. A. Soc. Straits Branch, 1889, p. 186.

A female from Pappan Island, Labuan, Feb. 1892. This is the true Peregrine Falcon of northern latitudes, and has evidently been shot in its winter-quarters. It is not the dark form of Peregrine which occurs in Java and the other Indo-Malayan islands, which has been identified by Mr. Gurney and others with *F. melanogenys* of Australia.

2. Microhierax latifrons, Sharpe: Everett, t. c. p. 185.

An adult bird from the Lower Kinabatangan River, Jan. 5, 1892.

3. Scops mantananensis, Sharpe, Bull. B. O. C. i. p. iv.

The two typical specimens of this pretty eared Owlet were procured on the island of Mantanani in December 1891. It is surprising to find an isolated form of *Scops* in such a southern locality, where its nearest ally is *Scops elegans* of the Japanese islands. It much resembles the last-named bird, but is more broadly streaked with black below, and is easily recognized by the white tips to the wing-coverts forming a double band.

4. Anthipes olivacea (Hume): Oates, B. Ind. ii. p. 34.

Two specimens are sent by Mr. Everett, one from Bongon and the other from Marudu River in Northern Borneo. I cannot separate the Bornean specimens from typical examples from Tenasserim. Mr. Oates likewise gives Java and Borneo as a habitat. Javan birds are in the Museum, but do not seem to me to be strictly identical with the Tenasserim birds; but there is no example of this species from Borneo, and it is not included in Mr. Everett's list. So far as I know, this is the first record of it for the island.

5. **Picumnus innominatus** (Burton): Hargitt, Cat. B. xviii. p. 549.

A female bird from Bongon in North Borneo, Jan. 7, 1893. "Iris orange-brown: orbital skin blackish: bill black: feet and claws bluish grey. Shot on low hills covered with old forests at Timbang Batu, Bongon River." The occurrence of this species in Perak and Sumatra rendered its capture in Borneo probable, but this is the first instance of a recorded specimen.

VI. *Additions to the Avifauna of Mount Kina Balu.*

In Mr. Everett's last collection are several birds procured by his hunters on Mt. Kina Balu, some of which form interesting additions to Mr. Whitehead's list, though the small number of species added to the mountain fauna since that gentleman's celebrated exploration shows with what extraordinary completeness he did his work.

1. **Geocichla everetti**, Sharpe, Ibis, 1892, p. 2.

The specimen now sent from Kina Balu agrees with the type-specimen from Mt. Dulit. The throat is not so pure white as in the Dulit example. The under tail-coverts are perfect in Mr. Everett's skin: they are orange-buff, only a little lighter than the flanks, the lateral ones externally light brown, producing a broad border to some of the skins.

2. **Erithacus cyane** (Pall.): Everett, J. R. A. Soc. Straits Branch, p. 98.

3. **Burnesia superciliaris** (Salvad.): Everett, t. c. p. 102.

4. **Micropus melanoleucus** (Eyton): Everett, t. c. p. 112.

5. **Oriolus maculatus**, V.: Everett, t. c. p. 118.

Mr. Everett has sent a young bird from Melangkok, Kina Balu. It seems to me to be referable to this species, which has been already included in the Bornean list by Mr. Everett on the strength of some specimens from South Borneo in the Leyden Museum. Some doubts had been felt as to the correctness of the latter locality for the species, but it is probably quite correct.

6. **Lanius lucionensis**, L.: Everett, t. c. p. 121.

7. GERYGONE SALVADORII.

Gerygone salvadorii, Büttik. Notes Leyden Mus. xv. p. 175.

A female from Kinokok, Kina Balu, Nov. 1892. There can be no doubt that Mr. Büttikofer is correct in separating the Bornean *Gerygone* from *G. flaveola* and *G. sulphurea*, but the question is whether it is distinct from *G. modiglianii* of Salvadori (= *G. pectoralis*, Davison). *Cf.* Sharpe, Bull. B. O. C. no. ii. p. vii. I have compared it with the type of *G. pectoralis*, and the only difference that I can see is that the Bornean bird is a trifle darker.

8. HIRUNDO RUSTICA, L. : Everett, t. c. p. 134.

9. ARACHNORAPHIS EVERETTI, sp. n.

A. similis *A. affini*, sed major, rostro longiore, et colore viridescentiore distinguenda. Long. tot. 7·2 poll., culm. 1·7, alæ 3·6, caudæ 2·15, tarsi 0·85.

Mr. Everett's collectors obtained eight specimens of this large Spider-hunter on Kina Balu, and on comparing them with a series from Java the difference in the olivaceous colour of the upper surface is very recognizable, as the Javan birds are more golden than olive-green. The under surface is very perceptibly lighter, the lower breast and abdomen being conspicuously ashy white.

10. PRIONOCHILUS MACULATUS (T.) : Everett, t. c. p. 140.

11. ZOSTEROPS SQUAMIFRONS, Sharpe, Ibis, 1892, p. 323.

12. CALORNIS CHALYBEA (Horsf.) : Everett, t. c. p. 143.

13. CORONE MACRORHYNCHA (T.) : Everett, t. c. p. 145.

14. HARPACTES DULITENSIS, Grant, Cat. B. xvii. p. 501, pl. 17.

15. EURYSTOMUS ORIENTALIS (L.) : Sharpe, Cat. B. xvii. p. 33, pl. ii. fig. 1.

Mr. Everett has very kindly procured a series of nine specimens of this Roller from Kudat, Merabah, and Labuan, in order to test the occurrence of *Eurystomus calonyx* in Borneo. They all belong to true *E. orientalis*, which is the resident form in the island. The only specimen of *E. calonyx* from Borneo that I have seen is the specimen procured by Mr. Everett on Mt. Penrisen and recorded in the 'Catalogue' (p. 39). I cannot make out where Mr. Dresser finds a difficulty in recognizing these two species, and he will have to produce true *Eurystomus orientalis* from Mantchuria or China or the Himalayas, if he wishes to convince ornithologists who value geographical distribution at its proper worth.

E. calonyx is a *summer* visitor to China and Mantchuria, and breeds in those countries. It doubtless also inhabits and breeds in the Himalayas, where it finds an altitude which corresponds with the conditions of its north-eastern summer habitat.

E. orientalis is the *resident* form in the Indo-Malayan region, and these localities are visited by *E. calonyx* during winter. I should never be surprised to learn that some of the visitors interbreed with the resident birds, and this may account for the slight variation sometimes seen in the extent of blue on the tail of *E. orientalis*; but I have examined a large number of *E. calonyx* in the collections of Mr. Styan and Mr. De La Touche, and have not found the least difficulty in recognizing them as thoroughly distinct from *E. orientalis*. The latter is a more massive bird and has a much larger and stronger bill than *E. calonyx*.

16. **Butastur indicus**, Everett, t. c. p. 182.

17. **Pernis ptilorhynchus**, Everett, t. c. p. 184.

18. **Falco severus**, Horsf.: Everett, t. c. p. 186.

This species was previously known only from Moera Teweh in the Island of Borneo. Mr. Everett sends a beautiful male specimen.

19. **Glaucidium borneense**, Sharpe, above, p. 549.

A young male from the Kinokok Valley, in the rufous phase, but differing from the corresponding stage of *G. brodiei*. There will always be a chance, until exact comparisons of a series have been made, that *G. borneense* may be identical with *G. sylvaticum* from high Sumatra, but my recollection of the latter bird in the Leyden Museum advises me that the two species are not the same.

20. Neopus malayensis, Everett, t. c. p. 181.

21. Turtur tigrina, Everett, t. c. 193.

22. Bambusicola erythrophrys, Sharpe : Everett, t. c. p. 200.

My name is a little unfortunate for this species, as it seems to get a black head, and the rufous eyebrow disappears. This is seen in a beautiful adult male sent by Mr. Everett.

VII. *Description of the Nest and Eggs of* Staphidia everetti.

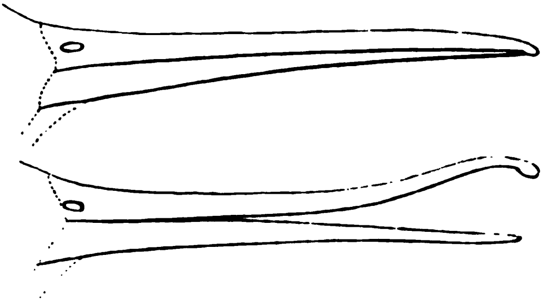
This nest, which was procured by Mr. Everett at Matang in Feb. 1892, is a good-sized cup-shaped structure, made almost entirely of fibres, with an external covering of fine rootlets and moss, with a few dead leaves interwoven. The eggs are white, thickly mottled and spotted with reddish brown, particularly at the larger end; the underlying spots are dark grey and very distinct. Axis 0·73 inch, diam. 0·55.

XLIX.—*On the Mechanism of the Upper Mandible in the* Scolopacidæ. By R. W. Shufeldt, M.D., C.M.Z.S.

Mr. W. P. Pycraft contributes a very interesting article, "On a Point in the Mechanism of the Bill in Birds," to 'The Ibis' for July 1893, and I am thankful to him for a copy of it which I have recently received.

Mr. Pycraft in that communication very well describes the peculiar power that the Dunlin (*Tringa alpina*) possesses of elevating the distal extremity of the superior mandible. I am inclined to believe that any true Scolopacine bird can voluntarily accomplish the same act at any time. Upon several occasions I have observed the performance of the feat in Wilson's Snipe (*Gallinago delicata*), and there can be no doubt but what the achievement, taken in connection with the extreme sensitiveness of the end of the upper beak in these birds, enables them to both quickly detect and *seize* their food in the soft ooze wherein they probe for it.

My friend Mr. Gurdon Trumbull has very accurately described the act performed by the Woodcock *, and he says that "I had heard from Dr. S., who secured this Woodcock for me, that he and his friend Mr. B. had seen the bird turn up the end of its upper mandible in a very peculiar and inexplicable manner. I was urged to watch carefully for a repetition of the occurrence. At the time I paid but little attention to the statement,—I was watching for so many other events; but while carrying my bird out into the country that last day of its confinement my friend's remark was most vividly recalled. I was holding the bird in my hand with a handkerchief around him, covering all but the bill, when suddenly, as he was making one of his frequent struggles to get away, I saw that the upper mandible was thrown upward as I have represented it in the lower outline of the accompanying woodcut.



Elevation of the end of the upper mandible in the American Woodcock (*Philohela minor*). After Trumbull.

"For an instant I thought that the bird must have met with an accident in some way, but as I touched the lifted mandible it was lowered to the usual position. Twice more during my walk he threw up the mandible in the same fashion, and each time I held him directly in front of my eyes and studied most carefully the exact curvature. There was no 'dilation,' nor any change of form other than that which I describe. He once held the bill in this strange position for nearly, if not quite, half a minute.

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* 'Forest and Stream,' vol. xxxv. No. 21. New York, Dec. 11, 1890, p. 412

"After liberating my captive and reaching home, I immediately procured a Woodcock that had been recently killed, and found that I could easily curve its mandible into the precise position into which my live bird could curve his own at will."

In the future it will be both interesting and important to ascertain which of all the *Limicolæ* have this power. I doubt if any of the typical Plovers can perform the act, or the Curlews, or the Phalaropes, or the Avocets and Stilts. About the Godwits (*Limosa*) there might be a doubt, and it may be that it will be found to be confined to the true Snipes and Sandpipers or the typical "probers" among the Scolopacidæ. Of course, no such power would be of any use to the Oyster-catchers (*Hæmatopus*), and I do not know about *Aphriza*. The development of such a power among these birds, in the history of the group, can easily be imagined, and requires nothing from me here. Its advantage is also quite apparent—an advantage very similar to that possessed by the new pattern of bullet-forceps over the old style of that surgical instrument, permitting as it does *sudden* seizure at the *distal* extremity, and extraction without a parting of the entire continuity of the jaws.

This peculiar mechanism of the beak of Scolopacine birds I believe to be worthy of more extended research on the part of biologists; and, indeed, there should be nothing of that kind considered to be beneath their notice. A thorough comprehension of the affinities and natural taxonomy of the Class Aves will require on our part a *full* knowledge of everything that in any way pertains to them. We cannot afford to overlook any "point" whatever, and it devolves upon each and all of us to contribute to the common stock of information whenever the opportunity affords. This being so, Mr. Pycraft's observation upon *Tringa alpina* is of importance, notwithstanding the fact that it has been previously described, by an American naturalist, for a bird belonging to the same group.

L.—*On the Validity of* Chrysotis canifrons.

By Geo. N. Lawrence.

Mr. E. Hartert, in his list of birds from the island of Aruba (above, p. 303), speaking of *Chrysotis ochroptera*, says:—"There can be no doubt that *Chrysotis canifrons* of Lawrence was described from an example of this species with a dirty forehead, such as I have seen in several cases. Among my specimens of *Chrysotis rothschildi* from Bonaire are several that show a somewhat ashy colour on the forehead."

Mr. Hartert procured three adult males of *C. ochroptera*. His description of them is as follows:—

"They are very bright-coloured, forehead and lores white with a faint ashy hue, the greater part of the top of the head, and in all three specimens some of the feathers on the neck also, rich yellow with rosy-orange bases; the entire sides of the head and chin of the same colour, corresponding with Brisson's description and Levaillant's very good figure."

In deciding that *C. canifrons* is merely *C. ochroptera* with a dirty forehead, Mr. Hartert speaks only of the forehead of my species, and strangely ignores any further comparison with *C. ochroptera*. If, instead of simply making this assertion, he had compared my description of *C. canifrons* with *C. ochroptera*, he would have found cause for doubt, and would have seen that they differ in nearly all particulars of plumage, although alike in the green colour of their bodies. In *C. canifrons* the chin and upper part of the throat are greyish ash, the sides of the head dull yellow. These parts in *C. ochroptera* are "rich yellow with rosy-orange bases." The bend of the wing in *C. canifrons* is yellow, with scarlet next the body; in *C. ochroptera* "the whole of the bend of the wing is yellow, and only a few scanty red feathers are sometimes to be seen next the body." The primaries in *C. canifrons* are dark blue, those of *C. ochroptera* being black. Mr. Hartert, in his description of *C. ochroptera*, does not mention the primaries, but they are black in his figure of the species, and Salvadori (Cat. Birds, xx. p. 288) states them to be of that colour. The thighs of *C. canifrons* are grey, in *C. ochroptera* they are yellow.

I think that the colour of the forehead in my *C. canifrons* is correctly described; from my recollection it was of a clear uniform greyish ash, with no appearance of being soiled, and the bird-dealer who had it in charge said that while it had lived (say for three months) there had been no change in its colour. But, whether described correctly or not, I have shown conclusively, by pointing out other differences of plumage, that it is very distinct from *C. ochroptera.*

There are some points in which Mr. Hartert's new species (*C. rothschildi*) closely resembles *C. canifrons.* They are much alike in the colours on the bend of the wing, *i. e.* yellow, with scarlet next the body; the primaries of both are dark blue, and in both the outer web of the outer tail-feather is bluish. I think that there are three distinct, closely allied species of this group of *Chrysotis*, all of them being bluish on the abdomen and having a broad terminal band on the tail of pale yellowish green.

The dimensions of *C. canifrons* somewhat exceed those given of the other two species. I am surprised that specimens of *C. canifrons* were not obtained by Mr. Hartert, but Aruba may not be its exact habitat.

New York, August 12th, 1893.

LI.—*Bulletin of the British Ornithologists' Club.*

No. X. (July 4th, 1893.)

The ninth meeting of the Club was held at the Restaurant Frascati, 32 Oxford Street, on Wednesday, the 21st of June, 1893.

Chairman : P. L. Sclater, F.R.S.

Members present :—R. S. Clarke, H. E. Dresser, H. O. Forbes, W. R. Ogilvie Grant, E. Hartert, A. P. Loyd, E. Neale, Frank Penrose, R. H. Read, Hon. Walter Rothschild, Howard Saunders (*Treas.*), H. Seebohm, R. Bowdler Sharpe, E. Cavendish Taylor, J. T. Tristram-Valentine.

Guests : T. F. Althaus, J. S. Whitaker (of Palermo).

A letter received from Prof. ALPHONSE MILNE-EDWARDS stated that his attention had been called by the Editor to the fact that the names of the genera *Pelargopsis* and *Tachyornis*, as proposed by him, had been preoccupied; he therefore wished to propose for *Pelargopsis* the amended name of *Pelargocrex*, and for *Tachyornis* the amended name of *Belornis*.

Dr. BOWDLER SHARPE exhibited the type specimen of *Rallus plateni*, which had been lent to him by Professor W. Blasius. This fine Wood-Rail had been discovered by the well-known traveller Dr. Platen, at Rurukan in Minahasa, W. Celebes. It was singularly like *Aramides* in appearance and build, while the barring of the flanks recalled *Hypotænidia*. Its long bill proclaimed it to belong to the section of Rails which included *Gymnocrex*, *Aramides*, *Megacrex*, and *Habroptila*; but its closest ally was evidently the South-American *Aramides*, on which account Dr. Sharpe proposed to call the genus

ARAMIDOPSIS, gen. n

Genus simile generi "*Aramides*" dicto, sed rostro longiore et graciliore, ad basin hallucem haud æquante, et sulco nasali longius producto distinguendum.

Typus est *Aramidopsis plateni* (Blasius).

The bill was very long and slender, and of nearly equal width the whole way, so that when measured at the base it was found to be less than the hind toe, whereas in *Aramides* the depth of the bill at base was about equal to the hind toe.

Dr. BOWDLER SHARPE also drew attention to the following new species of birds, of which Mr. Hose had recently received examples from Mount Kalulong, in Sarawak. Dr. Sharpe proposed the following names for them:—

TURDINUS KALULONGÆ, sp. n.

Similis *T. magnirostri*, sed pileo infuscato, gutture imo et præpectore toto cinereis minimè striolatis distinguendus. Long. tot. 6 poll., culm. 0·65, alæ 3·3, caudæ 2·8, tarsi 0·8.

TURDINUS TEPHROPS, sp. n.

Similis *T. sepiario*, sed pileo saturate grisco, haud dorso concolore, hypochondriis et subcaudalibus lætè cervinis, et gutture imo et præpectore cinereo striatis distinguendus. Long. tot. 5·2 poll., culm. 0·8, alæ 3·0, caudæ 1·55, tarsi 1·1.

GLAUCIDIUM BORNEENSE.

G. simile *G. brodiei* et *G. sylvatico*, sed ab ambobus fasciâ cervicali albâ distinguendum. Long. tot. 6·0 poll., culm. 0·55, alæ 3·65, caudæ 1·9, tarsi 0·8.

A further communication from Dr. Sharpe described a new species of *Spilornis* from Sarawak, with the following diagnosis:—

SPILORNIS RAJA, sp. n.

Similis *S. sulaensi*, sed fasciis albidis pectoralibus et abdominalibus, axillaribusque valde crebrioribus distinguendus. Long. tot. 18·5 poll., alæ 12·2, caudæ 7·0, tarsi 3·25.

Mr. W. R. OGILVIE GRANT gave an account of a successful expedition which he had made to Banffshire with Capt. Savile Reid, to obtain the nests of the Snow-Bunting (*Plectrophenax nivalis*) and the Dotterel (*Eudromias morinellus*). The probable locality of the breeding-places of these two species had been indicated to him by Mr. F. D. Godman, F.R.S., with such foresight that Mr. Ogilvie Grant had obtained the nests of both species on the first day of his expedition. The nests of these two rare species of British birds would be shortly exhibited in the series of naturally mounted groups at the British Museum.

Mr. SCLATER exhibited a skin of the Grey Phalarope (*Phalaropus fulicarius*), apparently of a bird assuming summer plumage, from Chili, transmitted to him by Dr. R. A. Philippi, of Santiago, C.M.Z.S., and remarked that the occasional visits of this Phalarope to Chili had been already noted by Mr. Salvin (P. Z. S. 1883, p. 429).

Mr. Saunders ('Manual,' p. 551) had stated that the Red-necked Phalarope (*P. hyperboreus*) also occurred in Chili, but Mr. Sclater had not been able to find any authority for this, though Wilson's Phalarope of N. America (*P. wilsoni*) was an occasional visitor to Chili and Patagonia (see Seebohm, 'Plovers,' p. 343, and James's 'New List of Chilian Birds,' p. 11).

Mr. Sclater also exhibited a skin of a rare Pigeon (*Geophaps plumifera*) [*cf.* Gould, 'Birds of Australia,' v. pl. 69] from Northern Queensland, one of ten which had been received alive at the Zoological Gardens, Antwerp. Mr. Gould's type of the species was for many years unique, but more recently several specimens had been obtained in North-western Australia by the late Mr. T. H. Bowyer-Bower, and were now in the British Museum.

The Hon. Walter Rothschild exhibited specimens of three species of *Chasiempis* from the Sandwich Islands. Of all of these species he had received examples of young and old birds from Mr. Henry Palmer. Mr. Rothschild pointed out that, while most of the genera of Sandwich Island birds were distributed all over the archipelago, the genus *Chasiempis* was confined to the islands of Kauai, Hawaii, and Oahu. While Mr. Sclater had maintained that there was only one species of *Chasiempis* in the Sandwich Islands, Dr. Stejneger had recognized no less than five different forms, this result being attained by separating the rufous-rumped birds, which were the young ones, from the white-rumped birds, which were the adults. Mr. Rothschild pointed out that there were three distinct species, as follows:—

Chasiempis sclateri, of Ridgway, from Kauai; *C. ridgwayi*, Stejneger, from Hawaii; and *C. sandwichensis* (Gmelin), from Oahu.

Mr. Rothschild also exhibited and described examples of the following species:—

Loxops wolstenholmei, sp. nov.

This little species can be at once distinguished from *L. coccinea* (Gm.), and *L. ochracea*, Rothsch., by its smaller size and the dull cinnabar-red of the upper surface. The rump and belly are also cinnabar, but strongly flushed with orange.

Wings and tail brown, each feather bordered on the outer edge with buffy red. Wing 2·2 inches, tail 1·7.

Hab. Island of Oahu, Sandwich group.

Named after Henry Palmer's companion, who shot the only specimen at present known.

VIRIDONIA MACULATA (Cab.).

This bird was originally described by Professor Cabanis from an adult female and an immature male from Oahu, and placed in the genus *Himatione* (Mus. Hein. i. p. 100, note, 1851).

A large series of this rare species had been sent in April last by Henry Palmer from Oahu, which proved that the bird was not a true *Himatione*, but formed a second species of the genus *Viridonia* (Ann. & Mag. Nat. Hist. ser. 6, x. p. 112).

Adult male. Upper surface bright olive-green; forehead, throat, and under surface bright golden yellow, less bright on the under surface, and fading almost to white at the vent. Flanks slightly mottled with olive-green.

Hab. Island of Oahu, in thick jungle high on the mountains.

ANOUS HAWAIIENSIS, sp. nov.

This species, which is confined to the Hawaiian group of islands, differs from its nearest congener *A. melanogenys*, Gray, in that the grey colour, instead of being confined to the crown of the head, is spread over the neck and interscapular region. The tail and rump also, instead of being black, are pale grey. Under surface of neck also slightly washed with grey, instead of being uniform black as in *A. melanogenys*. The wing in the new species seems to be shorter, varying from 0·5 to 0·75 inch. The beak is slightly stouter and a little less pointed.

Types in Mus. W. Rothschild and in Brit. Mus.

ŒSTRELATA NIGRIPENNIS, sp. nov.

Œ. defilippianæ, Gigl. et Salvad., affinis, sed rostro multo breviore et robustiore, ad basin latiore; margine alarum

subtus latiore, nigricanti-grisco; remige externo subtus (parte exposita) in pogonio interno fere omnino nigro, reliquorum parte proxima tantum alba; axillaribus albis. Long. tot. circa 12 poll., al. 8·7, caud. rectr. med. 4·1, rectr. later. 3·25, rostri a rictu 1·25, tars. 1·15, dig. med. et int. 1·35, dig. ext. 1·1. (Type in Mus. W. Rothschild.)

Hab. Kermadec Islands.

Obs. This species belongs to the "*Œ. cooki* (Gray)" section of the genus *Œstrelata*, of which *Œ. defilippiana* is also a member. It differs from all its congeners in having a short, stout, wide bill, and in the almost total absence of white on the inner webs of the outer primary beneath, the under wing-coverts, with the exception of a rather wide margin, being white as well as the axillary feathers.

THALASSOGERON SALVINI, sp. nov.

Similis *Th. cauto*, sed rostro multo minore, ad basin minus elevato, plumbescente nec albido, tarsis et digitis brevioribus quoque dignoscendus.

♀ mari similis.

Hab. New Zealand.

Obs. This is the "*Diomedea cauta*" of Buller and other writers on New Zealand birds. On comparing my series of specimens with one of Gould's types of *T. cautus* in the British Museum, the differences above pointed out are apparent.

In coloration this species is apparently greyer on the head and neck, the dark loral mark in front of the eye being very conspicuous. This species, as well as *T. cautus*, belong to Mr. Ridgway's genus *Thalassogeron*, the sides of the culminicorn being nearly parallel to the base and separated from the latericorn by an interval of soft skin.

DIOMEDEA BULLERI, sp. nov.

Thalassogeronti culminato quoad colores similis, sed rostro pallidiore, culmine ad basin latiore, ad latera attingente, culmine omnino flavo; alis subtus niveis.

Hab. New Zealand.

Type in Mus. W. Rothschild.

Obs. This is the "*Diomedea culminata*" of Buller and other

New-Zealand writers, but it differs materially from the true *Thalassogeron culminatus* (Gould), a species of Ridgway's genus *Thalassogeron,* the base of the culminicorn being separated by an interval of soft skin from the latericorn. In this respect the present species is somewhat intermediate between *Diomedea* and *Thalassogeron,* but the base of the culminicorn, though not so well developed, distinctly spreads and has a well-defined posterior margin.

It is just possible that this species may prove to be *Diomedea gilliana* of Coues, from an unknown locality, but the bill is differently coloured, and the under wing-coverts are white instead of the same colour as the upper surface.

These three species of *Procellariidæ* in my collection were pointed out to me as new by Mr. Osbert Salvin, who has kindly confirmed the diagnoses.

The Members then adjourned to the large room at the Frascati Restaurant, where Mr. Rothschild exhibited specimens of all the new species described by him at the Meeting, and called attention to other rare birds from his collection. Among these were examples of *Phalacrocorax featherstoni* of Buller, of which a living example and many skins were shown, as well as skins of *Tetraophasis szechenyi* and *Palæornis salvadorii.*

Mr. Rothschild likewise exhibited living specimens of the various species of *Apteryx*, 9 in number, viz. :—

2 *Apteryx mantelli,* ♂ ♀.
2 „ *lawryi,* ♂ ♀.
2 „ *oweni,* ♂ ♀.
2 „ *haasti,* ♂ ♀.
1 „ *occidentalis,* ♀.

The following paper was then read, and was illustrated by the exhibition of nearly 100 specimens of *Apteryges* :—

"Notes on the Genus *Apteryx*.

By the Hon. Walter Rothschild.

"Since my controversy with Mr. H. O. Forbes in the pages of the 'Annals and Magazine of Natural History,' on the subject of *Apteryx haasti*, I have gone exhaustively into the history of the genus *Apteryx*, and I hope soon to publish a complete Monograph on the subject.

"Possessing, however, a large series of skins, and examples of no less than five species in a living state, I thought it would be interesting to the Club to exhibit this series of skins, along with the living specimens, and I add a few remarks on the geographical distribution and synonymy of this very strange family of birds.

"Hitherto five species of *Apteryx* have been described and accepted, viz.:—

"*Apteryx australis*, Shaw.
A. mantelli, Bartlett (syn. *A. bulleri*, Sharpe).
A. maximus, Verreaux.
A. oweni, Gould.
A. haasti, Potts.

"On these five species there have been many discussions, especially with regard to *A. mantelli*, *A. haasti*, and *A. maximus*.

"As regards *A. mantelli*, I can only point out that Dr. Otto Finsch maintained that Mr. Bartlett's diagnosis was founded on a false basis, and he, moreover, believed that the North-Island *Apteryx* was barely worthy of subspecific rank. Sir Walter Buller, however, and all other ornithologists who have expressed any opinion on the subject, maintain, and I am convinced rightly, that the North-Island bird is distinct from *A. australis*. But Sir Walter Buller unfortunately misled Dr. Sharpe into re-naming the North-Island bird by omitting to state that, however faint were the characters which Bartlett used to diagnose his species, he most emphatically stated (P. Z. S. 1850, p. 276) that all the specimens of his *A. mantelli* came from the *North* Island. This fact, I think, establishes without a doubt the priority of Mr. Bartlett's name of *Apteryx mantelli*.

"By many people it has been maintained that *Apteryx haasti* is a natural hybrid between *A. australis* and *A. oweni*.

This I believe to be entirely erroneous, because, although at Okarita, where the original specimens of *A. haasti* were obtained, *A. australis* and *A. oweni* were at one time found, the localities whence I have obtained *A. haasti* in some numbers during the last few years are quite uninhabited by the other species. *A. haasti* at the present time inhabits the crater-like valleys between the highlands of the southern and central mountain-chains in the South Island; but it is also found in isolated places in the King-country in the North Island.

"*Apteryx australis* was formerly abundant all over the lower scrub-covered districts of the South Island, but is now almost exclusively confined to the Dusky-Bay region.

"*Apteryx maximus* is almost a fictitious species, though I am inclined to agree with Prof. Hutton that it was only an overgrown *A. haasti*. The name was published originally, without a description, by Bonaparte in the 'Comptes Rendus,' xliii. p. 841, taken from an unpublished manuscript of Jules Verreaux, and then Prof. Hutton described a foot in his 'Catalogue of the Birds of New Zealand' and ascribed it to this species. Both references, however, distinctly refer to a bird from the *South Island*. In 1890, Sir Walter Buller finally announced that he had discovered the true *A. maximus* on Stewart Island, and I am fortunate in possessing the entire series from his collection; but I most emphatically say that this species cannot be *A. maximus* of Verreaux, and therefore I have much pleasure in naming it *Apteryx lawryi*, after Sir W. Lawry Buller.

"Sir W. Buller fully described this bird before the Wellington Scientific Society. All that I shall add is, therefore, that though the differences between it and *A. australis* are very slight, they are apparently constant, owing, no doubt, to the isolation of the species.

"*Apteryx oweni* is found exclusively on the east coast of the South Island, and there is nothing particular to be said regarding this species.

"On the west coast of the South and North Islands, from one end to the other, occurs, however, a grey *Apteryx*, which has hitherto been confounded with the typical *A. oweni*. This form differs from *A. oweni* in its much larger size (being quite as big as *A. australis*), in its comparatively very small bill, and in the heavy black bars on the feathers. I propose to call this *Apteryx occidentalis*, a subspecies of *A. oweni*.

"So far I consider we shall be justified in accepting the following as a complete list of the species of *Apteryx* as at present known:—

"*A. australis*, Shaw. South Island.
A. lawryi, sp. nov. Stewart Island.
A. mantelli, Bartl. North Island.
A. oweni, Gould. East coast, South Island.
A. oweni occidentalis, subsp. n. North Island, and west coast, South Island.
A. haasti, Potts. Central South Island and west of the North Island.
A. maximus, Verr. (sp. dub.). South Island."

* * *

LII.—*Notices of recent Ornithological Publications.*

[Continued from p. 403.]

87. *Barboza du Bocage on the Birds of Angola.*

[Additions et Corrections à 'l'Ornithologie d'Angola.' Par J. V. Barboza du Bocage. Jorn. Sci. Math. Phys. e Nat. Lisboa, 2ª ser. no. viii. p. 248, e no. ix. p. 6, 1888.]

Since the publication of the 'Ornithologie d'Angola' in 1881, the well-known collector M. Anchieta has not ceased to send specimens from various localities of the interior of that country to the Lisbon Museum. M. Barboza du Bocage now gives us the corrections and additions to his work, necessitated by the receipt of these collections and in other ways. They relate to about 70 species, of which *Scoptelus anchietæ* and *Nectarinia gadowi* are now described as new. A single example of the Black Stork (*Ciconia nigra*) from Angola is recorded.

88. *Bryden on South-African Birds.*

[Gun and Camera in Southern Africa; a year of wanderings in Bechuanaland, the Kalahari Desert, and the Lake River country, Ngamiland, with notes on Colonization, Natives, Natural History, and Sport. By H. Anderson Bryden. 8vo. London: Stanford, 1893.]

The author of 'Kloof and Karroo'—a well-known authority on sporting in South Africa—after a stay of some months in Bechuanaland in 1890, made a grand hunting-tour northwards across the Kalahari Desert to the banks of the Botletli River. Mr. Bryden's narrative contains constant references to birds, and whole chapters devoted to Natural History. At a salt-pan near Morokweng, in the South Kalahari, he met with *Ægialitis tricollaris*, "that tiny Plover known up-country as the 'Sea-cow bird,' from its habit of constantly attending the hippopotamus." "Many kinds of African game," he says, "have some special attendant feathered friends, who free them of parasites, gently titillate their skins, and warn them of danger."

Further north, near Kolobeng, Mr. Bryden entered the range of one of the most peculiar of the Touracous, known to the natives as the "*Moochooey*" or "*Mukuey*," and to naturalists as *Schizorhis concolor*. This bird, which is noticeable by its unrelieved, dull, drab colouring, its long tail, elevated cockatoo-like crest, and harsh screaming cry, is common in North Bechuanaland, and especially so among the great trees on the banks of the Crocodile River. Its startling, human-like cry is said to be very remarkable.

On the Botletli River, which was then in flood, the travellers were able to feast their eyes "on a scene of incredible charm, acres upon acres of water all black with waterfowl." These and the other birds of Ngamiland are described in a special chapter. Another chapter is devoted to the "game-birds" of Bechuanaland—Guinea-fowls, Francolins, Bustards, Quails, and Sand-Grouse. It is interesting to learn that even in this newly-acquired territory game-laws have been enacted for the preservation of these birds during the breeding-season.

89. *Elliot's 'Monograph of the* Pittidæ.'

[A Monograph of the *Pittidæ*, or Family of Ant-Thrushes. By D. G. Elliot, F.R.S.E. &c. Second edition, revised and enlarged. Part I. Folio. Quaritch: London, 1893.]

Mr. D. G. Elliot has issued the first part of the new edition of the 'Monograph of the Pittidæ,' the preparation of which we have already announced (Ibis, 1892, p. 580). The first edition was issued in 1863, so that many additions have to be made to it.

The following ten species are described and figured:—

Eucichla gurneyi.
Pitta moluccensis.
—— *maxima.*
—— *venusta.*
—— *rosenbergi.*
Eucichla schwaneri.
Pitta oatesi.
—— *angolensis.*
—— *arcuata.*
—— *sordida.*

Four of these plates are newly drawn by Mr. W. Hart, the others are reproduced from the old stones. As regards the nomenclature of these birds, we are pleased to find that Mr. Elliot has come round so far as to employ *Pitta* and *Eucichla* as the two principal generic terms. We could have wished that as regards the specific appellations he had also followed the lead of the 'British Museum Catalogue.' To call a bird, which does not occur in the Moluccas, "*moluccensis*," seems very objectionable. Nor does it appear by any means certain, in spite of Lord Tweeddale's arguments (Trans. Zool. Soc. ix. 188), that *Turdus sordidus* of P. L. S. Müller was based on what we prefer to call *Pitta atricapilla*. Müller's name is, in our opinion, void for uncertainty, as well as inappropriate.

90. *Fisher on the Hawks and Owls of the United States.*

[The Hawks and Owls of the United States in their relation to Agriculture. Prepared under the direction of Dr. C. Hart Merriam, Ornithologist, by A. K. Fisher, M.D., Assistant Ornithologist, U.S. Department of Agriculture, division Ornithology and Mammology. Bulletin No. 3. 8vo. Washington, 1893.]

We have been much pleased with this volume and with its beautiful illustrations, and can cordially recommend it to all lovers of birds. Dr. Fisher and his fellow-experts have examined the actual contents of the stomachs of about 2700 specimens of the Diurnal and Nocturnal Birds of Prey of the United States. "The result proves that a class of birds commonly looked upon as enemies to the farmer, and indiscriminately destroyed whenever occasion offers, really rank as his best friends, and, with few exceptions, should be preserved and encouraged to take up their abode in the neighbourhood of his home. Only six of the 73 species of Hawks and Owls of the United States are injurious, and of these three are so extremely rare that they need hardly be considered."

That Owls are amongst the most beneficial of birds has long been a doctrine taught by all ornithologists, though its truth is by no means yet allowed by English gamekeepers. Dr. Fisher's volume, which we owe to the energetic action of our friend Dr. C. Hart Merriam, clearly shows that the majority of Hawks belong to the same category. Many of the species, in the United States at least, destroy noxious insects in enormous quantities, and there can be little doubt that the same is the case in Europe. In the western prairies flocks of Buzzards (*Buteo swainsoni*) congregate wherever grasshoppers and crickets abound. Dr. Merriam has estimated "that at least 200 grasshoppers are consumed daily by one Buzzard; and, in the course of a month, a flock of about 165 individuals, which is a small estimate of the number actually seen together in various localities feeding upon grasshoppers, will destroy 1,000,000 adult insects—a benefit to agriculture which no farmer can fail to appreciate."

In spite of these and other similar facts, the State of Colorado some years since "passed a bounty-act which included these birds. As a result, thousands of grasshopper-eating Hawks were destroyed at the expense of the State—an expense by no means to be estimated by the number of dollars paid out as blood-money; for if the destruction be carried far enough, and the birds of prey actually exterminated, there is every reason to believe that sooner or later one of the consequences will be another grasshopper-plague."

Of the 2690 stomachs of Accipitres and Striges examined in the preparation of this volume, 169 (only) contained the remains of poultry and game-birds; 463 remains of other birds; 966 those of mice; 397 those of other mammals, and not less than 623 insect-remains only. It is evident, therefore, that in North America mice and insects form the principal food of both Hawks and Owls, and that (with the exception perhaps of the Sparrow-Hawks and their allies) these birds deserve the most kindly protection instead of the destruction too often meted out to them.

91. *Fisher on the Birds of the Death-Valley Expedition.*

[North-American Fauna. No. 7. The Death-Valley Expedition—a Biological Survey of parts of California, Nevada, Arizona, and Utah. Part ii. Art. 1. Report on Birds. By A. K. Fisher, M.D. Washington, 1893.]

Death-Valley is a remarkable elongated depression in Southern California, near the borders of Nevada, which extends some 135 miles from north to south, and, at its lowest point, attains a depth of 480 feet *below* the sea-level. Dr. Merriam and a party of naturalists explored this valley and the adjoining districts in 1891, and the present volume contains most of the special reports on the results, the general report and that on the Mammals being not yet ready for issue.

The "species and subspecies" of birds, of which examples were obtained during this expedition, were 290 in number, on which many interesting field-notes are given. In Death-Valley itself 78 species were noticed, amongst which the White-throated Swift (*Aeronautes melanoleucus*) was "common" at one locality "in April and June." Other noteworthy species in the list are *Dryobates scalaris bairdi*, *Calypte costæ*, *Spizella atrogularis* (found breeding in the Coso Mountains), and *Harporhynchus lecontei*. *Leucosticte tephrocotis* was discovered nesting abundantly in the Southern Sierra and White Mountains, where it is a "common summer resident."

92. *Hatch on the Birds of Minnesota.*

[First Report of the State Zoölogist, accompanied with Notes on the Birds of Minnesota, by Dr. P. L. Hatch.—Henry F. Nachtrieb, State Zoölogist. 8vo. Minneapolis, 1892.]

The States of America are following the lead of the counties of England, and will soon each have their volume on their native birds. That for the great Western State of Minnesota is now before us, kindly forwarded by Mr. Henry F. Nachtrieb, the "State Zoologist," from Minneapolis. It has been prepared by Dr. P. L. Hatch, who has for some years been engaged in collecting notes on the subject. To these notes the specific characters of each species are added. The nomenclature and arrangement are those of the A. O. U.

93. *Helms on the Birds of South Greenland.*

[Ornithologiske Iagttagelser fra Arsukfjorden, Sydgrönland. Af O. Helms. Vidensk. Naturh. Foren. i Kjöbenh. 1892, p. 221.]

These notes were made by Mr. Helms during a thirteen months' residence at Ivigtut, on the Arsuk Fiord, in South Greenland, from April 1890 to June 1891. They are supplemented with those of Dr. Th. Krabbe, who stayed at the neighbouring station of Arsuk from August 1889 to October 1890. They relate to 44 species, of which only 7 are Passeres.

94. *Hudson's 'Birds in a Village.'*

[Birds in a Village. By W. H. Hudson, C.M.Z.S. 8vo. London: 1893. Chapman and Hall.]

Under this title Mr. Hudson gives us another volume of his charming essays on themes more or less connected with bird-life, the principal article containing an account of the birds observed in a "rustic village, not more than twenty-five minutes' walk from a small station, only one hour from London," to which he retreated in the summer of last year. Some of the smaller articles are reprinted from well-known periodicals. They will all be read with pleasure, not only because of the subjects spoken of, but also on account of their pure and excellent diction and the many strange fancies involved in them. But in spite of Mr. Hudson's admiration (see p. 76), we must continue to regard the Greenfinch as an emphatically "dull" bird, and to prefer the lively Wood-Pigeon, which he stigmatizes, most unfairly in our opinion, as a "dismal croaker" (p. 101).

95. *Keeler on the Colours of Birds.*

[Evolution of the Colours of North-American Land Birds. By Charles A. Keeler. 8vo. San Francisco: 1893. Pp. 361; 17 plates. Occasional Papers of the Californian Ac. of Sci. no. iii.]

This is, no doubt, a valuable contribution towards our knowledge of an obscure and little-discussed subject, "written more with the hope of stimulating thought and inciting research" than with the expectation of reaching definite results. The problems, indeed, of sexual coloration are, in our opinion, hardly ripe for settlement; here, as elsewhere in matters relating to animal coloration, the facts have been altogether outstripped by the theories. It is, however, most useful to do as Mr. Keeler has done—to give a general account of the facts and theories relating to a particular group. In these days of necessary specialism no one head can possibly carry enough facts to give an impartial and thoroughly well-informed survey of the colour-phenomena of the entire animal kingdom. The whole subject, too, has been approached more from the speculative and less from the physiological side than ought to have been the case. Dr. Sauermann's remarkable experiments (duly quoted by our author) on feeding white fowls with the colouring-matter of cayenne pepper showed conclusively that the colour was not uniformly absorbed by the feathers, but that there was a distinct selective process, certain parts of the body only becoming tinged. This naturally suggests that other factors than natural selection may operate in producing patches and spots in other birds, which have been hitherto set down to "protective resemblance," "mimicry," &c. The *onus probandi*, moreover, does not entirely lie with those who look with more or less concealed scepticism upon the application of one universal key to the unlocking of all the secrets of animal colorations. In the meantime we cordially welcome an honest discussion of the subject, accompanied with numerous valuable facts.

96. *Lorenz's Ornithological Excursion to the Lower Danube.*

[Bericht über eine ornithologische Excursion an die untere Donau. Von Dr. Ludwig Lorenz v. Liburnau. Ann. d. k. k. naturh. Hofmuseums, vii. p. 135.]

Dr. L. Lorenz v. Liburnau gives us an interesting account of his ornithological excursion to the Lower Danube in May and June last year. He started with his companions from Apatin (a day and a half below Vienna by steamer) in two large boats on May 10th, passed the "Iron Gates" on May 21st, and Widdin on the 25th. On the 27th May the great breeding-colony of aquatic birds on the island of Bistrizal, in Roumania, was reached. Here Ibises (*Plegadis falcinellus*), Herons of several species, Spoonbills, Black Kites, and various Ducks were found breeding in abundance. On the 1st of June another breeding-place on the island of Katnovoc, in Roumania, was discovered; here, besides the Herons and other usual birds, was found a colony of *Phalacrocorax pygmæus.* On June 10th Silistria was reached, and Czernavoda, where the voyage ended, on the 12th. Besides the above-mentioned breeding-places, numerous other smaller ones were visited, and ornithological observations are interspersed throughout the paper. *Saxicola pleschanka* (= *S. leucomela*, K. & Bl.) was met with near Rasova.

97. *Meyer on a new Subspecies of* Goura.

[*Goura beccarii huonensis*, n. subsp. Von A. B. Meyer. Ornith. Jahresb. 1893, p. 65.]

Dr. A. B. Meyer distinguishes the form of Crowned Pigeon of the Victoria group that occurs in Huon Gulf, Eastern New Guinea, as *G. beccarii huonensis* (*cf.* Salvad. Cat. B. xxi. p. 625).

98. *A. Newton and Gadow's 'Dictionary of Birds.'*

[A Dictionary of Birds. By Alfred Newton, assisted by Hans Gadow: with Contributions from Richard Lydekker, Charles S. Roy, and Robert W. Shufeldt. Part I. London: A. & C. Black, 1893.]

Those who are acquainted with the ornithological essays hidden away in the mighty series of volumes which constitute the ninth edition of the 'Encyclopædia Britannica' will rejoice at the opportunity now afforded to them of securing a new and augmented edition of these excellent treatises in a uniform and portable shape. Taking these articles as a foundation, Prof. Newton "has tried, first to modify them into something like continuity, so far as alphabetical arrangement will admit, and next to supplement them by the intercalation of a much greater number, be they short or long, to serve the same end." Of these additions Prof. Newton, in his preface, calls special attention to those furnished by Dr. Gadow, which, as he correctly states, "bring up the anatomical portion of the subject to a level previously unattained," and which will be of very great assistance to the many enquiring ornithologists who have not paid special attention to ornithotomy.

Numerous well-executed woodcuts illustrate the Dictionary, amongst which will be observed a number of the products of Swainson's facile pencil, borrowed from his 'Classification of Birds.' In the map of "Zoo-geographical Regions," which is prefixed to the volume, we regret to see the Nearctic and Palæarctic Regions united under the title of "Holarctic." This is a concession to the exaggerated deductions of certain recent American writers which we cannot approve, and which may be refuted from their own statistics.

The completion of the Dictionary will be looked for with anxiety by all those interested in the study of birds.

99. *E. Newton and Gadow on Fossil Birds' Bones from Mauritius.*

[On additional Bones of the Dodo and other Extinct Birds of Mauritius obtained by Mr. Théodore Sauzier. By Sir Edward Newton, K.C.M.G., F.L.S., C.M.Z.S., and Hans Gadow, Ph.D., M.A., F.R.S., F.Z.S. Trans. Zool. Soc. vol. xiii. p. 281.]

Renewed explorations of the celebrated "Mare aux Songes" in Mauritius, carried on under the direction of Mr. Théodore Sauzier, have resulted in the discovery of a considerable number of bones of the Dodo and other birds, which have been sent to the Museum of the University of Cambridge for determination. The remains previously obtained in the "Mare aux Songes" were those of the large extinct Parrot, *Lophopsittacus mauritianus,* of an extinct species of *Astur,* of *Ardea garzetta, Aphanapteryx broecki,* and *Fulica newtoni.* Besides these, bones of a Flamingo have also been found (see 'Ibis,' 1866, p. 144). The collection now described by Sir E. Newton and Dr. Gadow contains not only bones of the above-named birds, but also those of a Finch, an Owl, four other species of Heron, a Bittern, a Darter, a Gannet, a Goose, a Duck, a Grebe, two species of Pigeon (one of which is probably the extinct *Funingus* (*Alectorœnas*) *nitidissimus*), a Water-hen, and two Petrels. Of these the authors describe and characterize as new, *Strix sauzieri, Astur alphonsi, Butorides mauritianus, Plotus nanus, Sarcidiornis mauritianus,* and *Anas theodori.* These remains are illustrated by four plates, one of which (plate xxxvi.) is devoted to the representation of the "first correctly restored and properly mounted skeleton" of *Didus ineptus* ever put together. This specimen belongs to the Government of Mauritius.

100. *North's Oological Notes on Australian Birds.*

[Oological Notes. I. Notes on the Nesting-place and Eggs of *Halcyon sordidus* and *Cyanorhamphus rayneri.* By Alfred J. North, F.L.S. Proc. Linn. Soc. N. S. Wales, ser. 2, vii. p. 395.]

The Mangrove Kingfisher of N.W. Australia (*Halcyon sordidus*) was found breeding by Mr. J. A. Boyd, of the Herbert River, Queensland, on Hinchinbrook Island, in October 1892. The hole was bored in a termites' nest, placed on a branch of a tree 30 feet from the ground, and contained three eggs, white and rounded. Eggs of the Red-fronted Parrakeet of Norfolk Island (*Cyanorhamphus rayneri*) have been recently obtained by Dr. P. H. Metcalfe "from the hollow spout of a tree." They are white and oval.

101. *Oustalet on Birds from the Congo.*

[Notice préliminaire sur les Collections zoologiques recueillies par M. Jean Dybowski dans son expédition à travers le Congo et la région de l'Oubangui. 2e partie. Oiseaux. Par E. Oustalet. 'Le Naturaliste,' Ann. 15, p. 59 (1893).]

M. Oustalet gives a preliminary account of a collection of birds, containing 600 specimens referable to from 150 to 160 species, made by M. Jean Dybowski during his recent expedition in Congo-land. M. Oustalet speaks particularly of the Accipitres, Striges, and Picariæ in the series, and mentions that it contains a specimen of *Iynx pectoralis*, as well as examples of *Iynx torquilla*. Specimens of seven species of Bucerotidæ were collected.

102. *Pavesi on a Hybrid Duck.*

[Un Ibrido Naturale di *Anas boscas* e *Chaulelasmus streperus* ucciso nel Pavese. Pel S. C. Prof. P. Pavesi. Bull. Soc. Veneto-Trentina d. Sci. nat. v. no. 3, 1893.]

Prof. Pavesi describes a female duck obtained at Mezzanino, on the Po, and considers it as a hybrid between *Anas boschas* and *Chaulelasmus streperus*.

103. *Pigott's London Birds and other Sketches.*

[London Birds and London Insects, and other sketches. By T. Digby Pigott, C.B. London: Porter, 1892. 1 vol. 8vo.]

In this volume Mr. Pigott has reprinted a series of essays, mainly on his favourite subject of our native birds, recently contributed to various Reviews. Besides the feathered inhabitants of London, those of the "Outer Farnes," the Shetlands, the Broads of Norfolk, St. Kilda, and the Dutch Water-meadows are portrayed in lively and well-written paragraphs, which his brother members of the B.O.U. and other ornithologists will read with pleasure. A nominal list of the birds noticed at different times in London, mainly based upon that published in 1879 by Dr. Edward Hamilton (Zoologist, 1879, p. 273), is given in an Appendix.

104. *Reichenow on the Birds collected by Dr. Stuhlmann in East Africa.*

[Die von Herrn Dr. Fr. Stuhlmann in Ostafrika gesammelten Vögel. Von Dr. Anton Reichenow. Jahrb. d. Hamburgischen Anstalten, x. 1893.]

This is an article on the bird-collections made by Dr. Stuhlmann in 1888 and 1889 in Zanzibar, on the opposite coast-lands of German East Africa and at Quilimane. Dr. Reichenow has already given an account of them in the 'Journal f. Ornithologie' for 1889, but returns to the subject in order to add the collector's field-notes. The collection contained about 800 skins, referable to 170 species, some of which are new to the avifauna of East Africa. *Batis puella*, sp. nov., is described as the East-African representative of *B. molitor* of S. Africa. It is proposed to unite some eight or nine described species under *Dryoscopus major*, Hartl.

105. *Salvadori's Catalogue of the Pigeons.*

[Catalogue of the Birds in the British Museum. Volume XXI. Catalogue of the Columbæ, or Pigeons, in the Collection of the British Museum. By T. Salvadori. 676 pp., 15 coloured plates, 1893.]

Of the 'Catalogue of Pigeons' it is sufficient to say, in the words of Dr. Günther's preface, that the volume is a "worthy companion" to that on the Parrots which preceded it. The "conscientious attention" to details of every description renders Count Salvadori's work most acceptable to those who have to put up with the slipshod style of some writers of modern days.

After the elimination of duplicates, the national collection of Pigeons numbers 7359 specimens. These are referred to 415 species. But the total number of species of Pigeons recognized in the present catalogue is 458, "besides 27 of a more doubtful character."

As regards the classification of the Columbæ, Count Salvadori confesses to have experienced much difficulty. The Pigeons, absolutely different from all other birds, "constitute a very homogeneous order, which does not admit of division into easily definable or sharply defined groups."

Having shown that Garrod's attempt to arrange them according to their anatomical structure does not lead to satisfactory results, the author reverts to external characters, and adopts a system not very different from those propounded in 1872 by Sundevall, and in 1880 by the Editor of this Journal ('Ibis,' 1880, p. 406). According to this plan the order Columbæ contains two suborders—Columbæ and Didi. The Columbæ are divided into five families—Treronidæ, Columbidæ, Peristeridæ, Gouridæ, and Didunculidæ. *Calœnas* is placed as a subfamily by itself at the end of the Peristeridæ. We are rather of opinion that the full rank of a family might have been accorded to this anomalous form.

The following generic and subgeneric terms are proposed as new in this volume :—

Nesœnas, gen. nov. Type *N. mayeri*.
Oxýpelia, gen. nov. Type *O. cyanopis*.
Calopelia, gen. nov. Type *C. puella*.
Histriophaps, gen. nov. Type *H. histrionica*.
Zonophaps, subg. nov. Type *Carp. forsteri*.
Cryptophaps, subg. nov. Type *Carp. pœcilorrhoa*.
Homopelia, subg. nov. Type *Turtur picturatus*.

The following species are described as new, or have new names assigned to them :—

Osmotreron wallacei, from Celebes and the Sula Is.
Phabotreron occipitalis, from Basilan, Philippine Is.
Ptilopus smithsonianus, from the Paumotu Is.
Columba crissalis, from Costa Rica and Veragua.
Turturœna sharpei, from Mt. Elgon, Central Africa.
—— *incerta*, ex patr. ign.
Macropygia goldiei, from S.E. New Guinea.
Zenaida yucatanensis, from Yucatan.
Turtur shelleyi, from Upper White Nile and Niger.
Geotrygon venezuelensis, from Merida, Venezuela.
Phlogœnas granti, from Aola, Guadalcanar.
—— *albicollis*, from Bow Island, Pacific.

Coloured figures are given of the following species:—

Sphenocercus formosæ, Osmotreron griseicauda, O. wallacei, O. aromatica, O. axillaris, Ptilopus eugeniæ, Carpophaga ænothorax, Columba grisea, C. albipennis, Turturænas delegorguei, T. sharpei, Chamæpelia buckleyi, Oxypelia cyanopis, Phlogænas beccarii, P. granti, P. albicollis, P. erythroptera, Leptoptila megalura, Osculatia purpurea, Otidiphaps insularis.

106. *Salvadori on* Merula alpestris.

[Intorno alla *Merula alpestris*, Brehm. Nota di Tommaso Salvadori. Boll. Mus. Zool. ed Anat. Comp. R. Univers. d. Torino, viii. 1893.]

Count Salvadori has taken up the question of the two forms of the Ring-Ouzel, which Mr. Seebohm discussed in this Journal in 1888 ('Ibis,' 1888, p. 309), especially as regards the Italian representatives of this bird. Though somewhat embarrassed by the difficulty of finding a sufficient series of exactly localized specimens, he has come to the conclusion that the northern and southern forms should be referred to different species, and that the resident species of the Alps and Apennines is *Merula alpestris*, while *M. torquata* also occurs in Italy as an autumnal visitant from the north. We should rather be disposed to class these birds as subspecies—*Turdus torquatus typicus* and *T. torquatus alpestris*—as there appear to be intermediate forms. A full synonymy of "*Merula alpestris*" is appended to the article.

107. *Shufeldt on the Position of* Chionis.

[The Chionididæ. A Review of the Opinions on the Systematic Position of the Family. By R. W. Shufeldt. The Auk, x. p. 158.]

Dr. Shufeldt reviews at some length the opinions of preceding writers as to the correct position of the Sheathbills, but does not deviate from the view expressed in a former article (*cf.* 'Ibis,' 1892, p. 343) that the Chionididæ constitute "one of the links among the Plovers and Gulls," and have their "nearest living allies in *Hæmatopus* and *Glareola*."

108. *Shufeldt on* Hesperornis.

[Comparative Osteological Notes on the Extinct Bird *Ichthyornis*. By R. W. Shufeldt. Journ. Anat. & Phys. xxvii. p. 336.]

Dr. Shufeldt compares the osteology of *Sterna* and *Rhynchops* with that of *Ichthyornis*, and comes to the conclusion that on the whole *Ichthyornis* "possesses more in common" with *Rhynchops* (which he considers should rank as a separate family) than with the Sterninæ.

109. *Swann on the Birds of London.*

[The Birds of London. By H. K. Swann. 12mo. London: 1893.]

This little book is intended to give notices of all the species of birds which are known to have occurred more or less frequently within a radius of some twelve miles of London. An introduction sketches the principal localities —Dagenham Lake and Hainhault Forest on the east; Wanstead Park, where there is still a heronry. On the north Kingsbury Reservoir, and on the south Richmond Park (with another heronry) and Ashtead Woods are especially alluded to. The systematic list contains notes on 221 species —a goodly number for a district so densely populated, besides several others more or less dubious.

110. *Whitehead on the Exploration of Kina Balu.*

[Exploration of Mount Kina Balu, North Borneo. By John Whitehead. With coloured plates and original illustrations. London: Gurney and Jackson, 1893. 1 vol. 4to.]

Before departing on a fresh expedition into the unexplored east Mr. Whitehead has done well in giving us full particulars concerning his previous journey, which lasted from 1884 to 1888. The great feature of this adventure was the ornithological exploration of Kina Balu, with the results of which readers of 'The Ibis' are already well acquainted. They will, however, be interested to learn the experiences undergone by Mr. Whitehead in attaining these results, and will admire the pertinacity with which, though foiled at first, he ultimately carried his plans to a most successful issue.

After two unavailing efforts the third start for Kina Balu from Labuan was made in January 1887; and this expedition lasted three months, eight weeks of which were spent in bird-collecting among the higher mountain-spurs. Of the species of which examples were obtained on this occasion 18 were new to science; and amongst these was the magnificent *Calyptomera whiteheadi*, a life-sized portrait of which, together with its nest, forms a frontispiece to the present volume. After varying his experiences by a run to Palawan (see 'Ibis,' 1888, p. 38), Mr. Whitehead started in December 1887 for his final expedition to Kina Balu, an account of which occupies his eighth and ninth chapters. The exact summit of the mountain being an inaccessible rock, the highest point reached by Mr. Whitehead was 13,525 feet, on February 11th, 1888. At elevations of above 7000 feet examples of ten new species of birds (four of which have been referred to new genera) were collected. The species that inhabit the region above 8000 feet, and do not descend much lower, are *Cryptolopha trivirgata, Oreoctistes leucops, Androphilus accentor, Corythocichla crassa*, and *Cuculus poliocephalus*. Above 10,000 feet only three species were noticed—*Merula seebohmi, Cettia oreophila*, and *Chlorocharis emiliæ*.

We lament the necessity which has compelled the author of this volume to issue it in a quarto form, and we fear that its size will interfere with its success. At the same time the mountain-sketches of Kina Balu are well worthy of reproduction on a large scale. We could also wish that a better map had been provided than the slight outline sketch given in the introduction. Without such assistance it is difficult, even for the most experienced geographer, to enter into the details of the ascent of Kina Balu and of the approaches to that mountain from the sea-coast.

LIII.—*Letters, Extracts, Notices, &c.*

The following letters, addressed to the Editor, have been received:—

Kilmory, Loch-Gilp-Head, N.B.,
August 28th, 1893.

Sir,—It may interest some of your readers who note the occurrences of migrants on their shores to know that a Goldfinch (*Carduelis elegans*) was observed in the island of North Uist on May 21st, 1893, by my son Arthur, who resides there. From what his gardener states there was probably another in its company.

My son also sends me a Tree-Sparrow (*Passer montanus*), which, although common in Barra and South Uist, had not previously, I believe, been obtained in North Uist.

I am,
Yours &c.,
John Campbell-Orde.

University Museum, Oxford,
August 20th, 1893.

Sir,—To the last number of 'The Ibis,' I contributed a paper "On a Point in the Mechanism of the Bill in Birds," being then under the impression that the peculiar movement therein described had not previously been recorded. Had I looked more carefully into Bronn's 'Thier-Reich,' I should have found both a figure and a description of the interesting phenomenon. The fig. (1), Taf. iv., is that of a section of the skull of a Snipe, the extent of the upward movement of the bill, which I endeavoured to describe, being indicated by dotted lines as in my figure. On reference to the description (p. 362) it will be seen that my interpretation of the phenomenon is exactly the same as Selenka's. Perhaps the only redeeming feature about this unfortunate piece of carelessness is that I have now brought the matter before non-German readers of 'The Ibis,' whilst had not the above-mentioned passage escaped my notice my paper would never have been written.

I am, Sir,
Yours &c.,
W. P. Pycraft.

Eton College Museum, Eton, Windsor,
September 30th, 1893.

Sir,—I am anxious to form a collection of British Birds "*in skin*" for the use of the Eton boys, and shall be glad to receive contributions from any of my brother members of the B. O. U. who may take an interest in the project.

It is proposed to include in the series examples of all the species mentioned in Saunders's 'Manual,' but I do not intend to have only what are called "British-killed" specimens. Examples from any part of the range of the species, if correctly localized and dated, will be quite acceptable; so that, in the case of stragglers from the New World, our American friends may be able to help us, if so inclined.

We have already in this Museum a series of British Birds, mounted in separate glass cases, most of which were given to the School by the late Provost Thackeray, of King's College, Cambridge. Among them are a certain number of rare birds, some of which are specially mentioned by Yarrell, who was a correspondent of the Provost.

There are a number of deficiencies in this series also, which I should like to make good, and of which I shall be delighted to supply a list on application.

It is obvious, however, that a collection of skins in cabinets will be much more useful for examination and comparison than the mounted specimens, so I hope that I shall be able, with the help specially of any Old Etonians who may be members of the B. O. U., to form a good series of English Birds "in skin." I am, Sir,

Yours &c.,

W. L. Sclater.

Sir,—The statements concerning the discovery of the nest of the Snow-Bunting in Banffshire in the 'Bulletin of the British Ornithologists' Club' for June last are not quite correct. The information afforded by the gentleman mentioned, who is lessee of the forest, may have led, and probably did lead indirectly, to the discovery. But the nest of the Snow-Bunting was not found by Mr. W. Ogilvie Grant. Both the precise locality and the nest were discovered by Mr. Hinxman, of the Geological Survey of Scotland, and Mr. Eagle Clarke, of the Edinburgh Museum of Science and Art, as has been related with strict accuracy in the 'Annals of Scottish Natural History,' No. 7, p. 181, July 1893. It will thus be seen that the earlier record is not the one which can claim priority as its right, on account of the inaccuracies which I have now pointed out.

I am always glad to hear of any new discoveries in connection with Scottish ornithology, but I consider it would be graceful to place the acknowledgments to the credit of those who *both gave the information and found the nest.*

In addition to the above remarks, I desire to draw attention to facts of which this gentleman takes no notice, viz. the earlier records of the breeding of the Snow-Bunting in other parts of Scotland. Amongst them I may mention one in the pages of 'The Ibis' (1889, p. 137) which is worthy of acknowledgment, and also two previous occasions on which Mr. Hinxman and Mr. Peach, of the staff of the Geological Survey of Scotland, found the young in Sutherland *. The former gentleman also found the young in West Ross in the following season. I am, Sir,

Yours &c.,
JOHN A. HARVIE-BROWN.

Turacin.—In 'Nature' of June 29th appears a report of the lecture recently delivered by Prof. A. H. Church before the Royal Institution upon turacin—a remarkable animal pigment containing copper. Turacin is found in the crimson-coloured portions of the plumage of certain genera of Musophagidæ—*Turacus, Gallirex,* and *Musophaga.* The peculiar interest of the pigment lies in two of its properties, (1) that it is soluble in water and (2) that it contains a definite proportion of copper. In this latter respect turacin is almost unique—the only other copper-containing organic compound known being hæmocyanin, the blue respiratory pigment occurring in the blood of many molluscs and arthropods. That turacin is such a definite compound is indicated by the fact that the pigment collected from birds of the different species yields a similar and constant proportion of copper. According to Prof. Church its composition is as follows: carbon 53·69; hydrogen 4·6; copper 7·01; nitrogen 6·96; and oxygen 27·74; corresponding pretty closely to the empirical formula $C_{82}\ H_{81}\ N_9\ O_{32}$. As already mentioned, the pigment is soluble in water. Its solubility is increased by the presence of an alkali; while excess of acid at once brings about its precipitation in the form of a non-crystalline substance of a dark crimson colour and semi-metallic lustre. Regarding the origin of the copper Prof. Church draws attention to the very wide distribution of traces of this metal amongst plants, while in banana-fruits, one of the favourite foods of the Musophagidæ, it exists in quite appreciable quantities. We believe that the fact of the solubility in water of the pigment in the wing-feathers of the Touracous was first discovered by the late Jules Verreaux, of Paris, during his expedition to the Cape Colony in 1825–30. Prof. Church, however, was the first investigator who ascertained the presence of copper in turacin.

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* See 'A Vertebrate Fauna of Sutherland, Caithness, and West Cromarty,' by T. E. Buckley and J. A. Harvie-Brown (Douglas, Edinb. 1887), p. 140.

Notes on the Birds of Chili.—Mr. Edwyn C. Reed, C.M.Z.S. (Baños de Canquenes, Santiago, Chili), in acknowledging the receipt of a copy of the 'New List of Chilian Birds,' sends us the following notes:—

"*Turdus fuscatus* and *Mimus triurus* are found near Mendoza, but I have never seen Chilian specimens.

"Besides the Hirundinidæ you mention there is a *Progne*, called by Philippi and Landbeck '*P. furcata*,' which has been shot several times in Chili."

This is, no doubt, *Progne furcata* of Arg. Orn. (i. p. 24) and of Sharpe (Cat. B. x. p. 175). But Dr. Philippi (P. Z. S. 1868, p. 531) has stated that he does not believe this to be a Chilian species. The locality, "Chili (*Bridges*)," given for specimen *b* in the 'Catalogue of Birds' (*l. s. c.*) is not trustworthy, because Bridges also collected largely near Mendoza (*cf.* P. Z. S. 1847, p. 28), and his specimens from that district were mixed up by Cuming, who was his agent in England, with those from Chili.

Mr. Reed considers that *Chrysomitris uropygialis* and *Pseudochloris aureiventris* should be classed as "summer visitants," and not as "residents," unless it be in Tarapacá, and doubts the occurrence of *Molothrus bonariensis* in Chili. *Elainea albiceps* is probably a "resident."

Eustephanus galeritus is, according to Mr. Reed, a "regular summer visitor." "A pair built a nest in a garden in Santiago a few years ago, and I saw plenty in the south all last autumn." *Oreotrochilus leucopleurus* is also a "summer visitor, as far as Atacama, but may be resident in Tarapacá."

The Maguari Stork (*Euxenura maguari*) is "certainly a resident, but not common."

"A species of *Dendrocygna* is an occasional visitant."

"*Oreophilus ruficollis* is resident; I have shot it in summer and in winter."

Mr. Perkins's Progress in the Sandwich Islands.—Mr. R. C. L. Perkins, whose "Notes on Collecting in Kona, Hawaii" appeared in the January number of 'The Ibis' (*suprà*, p. 101), after leaving that island continued his explorations in Oahu, the island on which Honolulu, the capital, stands; but, unfortunately, without meeting with either of the species of *Hemignathus*, *H. lichtensteini* and *H. lucidus* (*cf.* Ibis, 1890, p. 189), which formerly inhabited it, but which appear to have become extinct since the time of Townsend and Deppe. He subsequently transferred his operations to the island of Molokai, whence he has written that, in spite of the terrible weather—days of continuous rain alternating with fog—that made reaching the higher mountain-ranges, and still more doing any work there, a matter of the greatest difficulty, he had procured a good many birds, and among them specimens of the new species of *Acrulocercus* lately described by Mr. Rothschild, though it seems to be far from abundant. As Mr. Perkins, however, is a general collector, his labours have been highly useful in other branches of zoology, and very considerable series of all orders of insects have been sent home by him. The examination of these collections will doubtless throw great light on the important questions of the origin and development of the very peculiar fauna of the Sandwich Islands, which, like that of so many other island groups, is in danger of losing, if indeed it has not already lost, some of its most interesting types.

The Bird-collection in the University Museum, Cambridge. —In the Annual Report of the Museums and Lecture Rooms Syndicate of the University of Cambridge (for 1892) we are informed by the Strickland Curator, Dr. Gadow, that the "chief event of the last year, as regards the Bird-Museum, was the presentation by Mrs. W. B. Farr of the magnificent collection of skins of Indian Birds formed by her late husband. More than 1300 specimens, representing about 322 species, had been brought together by the late W. B. Farr, Esq., Comptroller of Accounts, Bengal Railways, chiefly from Bengal, the North-western Provinces, and the slopes of the Himalayas. All the specimens were correctly labelled, but unfortunately not a few had suffered from time and insects. However, no fewer than 121 species were not previously represented in the University Collection, among which are the extremely rare Central Asiatic bird *Ibidorhynchus struthersi*, the tiny Hawk *Hierax entolmos*, and *Ithaginis cruentus*. Owing to this welcome influx of skins, which, by the way, strains the capacity of the available space in the Bird Room to its utmost extent, the Indian Avifauna is now very well represented.

"The whole collection of birds in the museum consists now of about 21,500 specimens, representing no fewer than 5700 species, *i. e.* about half the number of species at present known."

The Collection of Austro-Hungarian Birds at Vienna.—Dr. Lorenz calls our attention to a serious error in our account of the series of Austro-Hungarian birds in the Vienna Museum (above, p. 459) which we have great pleasure in correcting. The number of unmounted specimens was incorrectly stated to be 10,900. It should have been 466, the former number being merely the "registry number" of the last specimen.

Dr. P. Leverkühn.—Dr. Paul Leverkühn, C.M.Z.S., has been appointed Director of the Scientific Institutions and Library of H.R.H. Prince Ferdinand of Bulgaria, and will reside at Sophia, the capital of Bulgaria.

List of Ornithological Works in course of Publication and Dates of the last Parts issued.

Bronn (H. G.). Klassen und Ordnungen des Thier-Reichs. Vögel. Von Hans Gadow. Lief. 44, 45 (1893).

Dubois (A.). Faune Illustrée des Vertébrés de la Belgique. Oiseaux. Livr. 148 (1893).

Elliot (D. G.). A Monograph of the *Pittidæ*, or Family of Ant-Thrushes. Second edition. Part I. (April 1893).

Giglioli (E. H.) and **Manzella** (A.). Iconografia dell' Avifauna Italica. Fasc. 50 (1892).

Lilford (Lord). Coloured Figures of the Birds of the British Islands. Part XXIV. (June 1893).

Menzbier (M. A.). Dr. N. A. Severtzow. Ornithologie du Turkestan. Livr. 3 (1891).

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Mosley (S. L.). British Birds; their Nests and Eggs. No. 69 (1892).

Nehrling (H.). North American Birds. Part VIII. (1893).

Pleske (Th.). Ornithographia Rossica. Band II. Lief. 5 (1891).

Sharpe (R. B.). Monograph of the *Paradiseidæ*, or Birds of Paradise. Part II. (1893).

Sharpe (R. B.) and **Wyatt** (C. W.). A Monograph of the *Hirundinidæ*. Part XV. (August 1892).

Sundman (C.). Finska Fogelägg.—Eggs of Finnish Birds. Livr. IX. (1888).

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INDEX OF SCIENTIFIC NAMES.

1893.

Abrornis olivacea, 155.
Acanthiza tenkatei, 129.
Acanthopneuste ijimæ, 272.
Accipiter buettikoferi, 345.
—— erythropus, 346.
—— exilis, 346.
—— gularis, 52.
—— hartlaubi, 345, 346.
—— minullus, 345, 346.
—— nisus, 65, 180, 197, 346.
—— rufiventris, 346.
—— rufotibialis, 418.
—— virgatus, 418.
Acredula caucasica, 242.
—— caudata, 240, 241, 242.
—— irbii, 241, 242.
—— macedonica, 240, 241, 248, 255.
—— rosea, 240, 241, 242, 243, 248.
—— tephronota, 241, 242, 248.
—— ——, var. major, 242.
—— trivirgata, 242, 243.
Acridotheres torquatus, 119.
Acrocephalus orientalis, 48.
Acrulocercus apicalis, 443.
—— bishopi, 442.
—— nobilis, 102, 109, 443.
Actitis incana, 213.
—— macularia, 325.
Actodromas acuminatus, 185.
Ægialitis cantiana, 170, 181, 203.
—— collaris, 335.
—— falklandica, 468.
Ægialitis hiaticula, 203, 355.
—— mongolica, 169, 181.
—— rufinucha, 307, 335.
—— tricollaris, 577.
—— wilsonius, var. rufinuchus, 307.
Ægithalus pendulinus, 448.
Ægithina viridissima, 392, 547.
Ælurœdus stonii, 461.
Aeronautes melanoleucus, 580.
Æsalon columbarius, 342, 343.
—— richardsoni, 342.
—— suckleyi, 342.
Æthiopsar torquatus, 119.
Æthopyga christinæ, 426, 430.
—— siparaja, 399.
—— temmincki, 399, 547, 551.
Agelæus flavus, 467, 469.
Ajaja rosea, 147, 465.
Alæmon desertorum, 83, 180.
—— margaritæ, 458.
Alauda arvensis, 194, 353, 543.
—— cristata, 83, 180.
—— galgula, 431.
—— longipennis, 378.
—— wattersi, 431.
Alca torda, 207, 358, 444.
Alcedo asiatica, 408.
—— bengalensis, 408.
—— guttata, 273.
—— ispida, 51, 217, 227, 408.
—— —— bengalensis, 51.
—— meninting, 408
Alcippe cinerea, 386, 547, 550.
—— morrisonia, 428.
Alectrurus risorius, 467, 468, 469, 485.
Allocotops calvus, 385.
Alseonax latirostris, 430.
Alsocomus puniceus, 426, 435.
Amalocichla sclateriana, 243, 245, 246.
Amaurolimnas concolor, 260.
Amblyornis inornata, 461.
Amblyospiza albifrons, 25.
Ammodromus savannarum, 123, 314, 327, 338.
Ammoperdix bonhami, 167, 181.
Ampelis garrula, 463.
Amydrus morio, 22.
—— tristrami, 476.
Anaplectes rubriceps, 24.
Anas sp., 545.
—— boscas, 354, 586.
—— boschas, 174, 181, 199, 586.
—— laysanensis, 250.
—— superciliosa, 543.
—— theodori, 585.
—— wyvilliana, 463.
Androphilus accentor, 281, 591.
Anorrhinus comatus, 411.
—— galeritus, 411, 547.
Anous cæruleus, 215.
—— hawaiiensis, 571.
—— leucocapilla, 215.
—— melanogenys, 571.
—— stolidus, 146, 215.
Anser albifrons, 265.
—— condoni, 271.
—— erythropus, 130.

Anthipes olivacea, 559.
Anthornis melanocephala, 525.
—— melanura, 512, 513, 521, 524.
Anthothreptes hypogrammica, 399, 551.
—— longuemarii, 17.
—— malaccensis, 399.
—— orientalis, 17.
—— phœnicotis, 547, 551.
—— rhodolæma, 400.
—— simplex, 399, 551.
Anthracoceros convexus, 410.
—— malabaricus, 410.
Anthreptes hypogrammica, 399.
—— longuemarii, 17.
—— malaccensis, 399.
—— rhodolæma, 400.
—— simplex, 399.
Anthus bertheloti, 191.
—— caffer, 27.
—— campestris, 191.
—— cervinus, 428.
—— maculatus, 428.
—— novæ-zealandiæ, 524.
—— obscurus, 351.
—— richardi, 428.
—— rufulus, 27.
—— spipoletta, 132.
—— trivialis, 191.
Anurolimnas castaneiceps, 260.
Anuropsis malaccensis, 388, 547, 550.
Apalis flavigularis, 16.
—— thoracica, 16.
Aphanapteryx broecki, 585.
—— hawkinsi, 254, 545.
Aphanolimnas monasa, 214.
Apteryx australis, 519, 574, 575, 576.
—— bulleri, 283.
—— haasti, 573, 574, 575, 576.
—— lawryi, 573, 575, 576.
—— mantelli, 573, 574, 576.
—— maximus, 127, 128, 574, 575, 576.
—— occidentalis, 573, 576.
Apteryx oweni, 519, 573, 574, 575, 576.
—— —— occidentalis, 576.
Aptornis defossor, 135.
Aquila boeki, 459, 460.
—— chrysaëtos, 65, 180.
—— fluvialis, 476.
—— hypogæa, 145.
—— imperialis, 66, 180.
—— nævia, 460.
—— pennata, 448.
—— rapax, 377, 459, 460.
—— sodalis, 271.
Arachnoraphis affinis, 561.
—— crassirostris, 400.
—— everetti, 561.
—— flaviventris, 400.
—— robusta, 400, 547.
Arachnothera flaviventris, 400.
—— juliæ, 400, 547.
—— longirostris, 400, 547, 551.
—— modesta, 400, 547, 551.
Aramidopsis plateni, 568.
Arboricola ardens, 56, 426, 436.
—— atrogularis, 436.
—— crudigularis, 436.
Archæotrogon venustus, 145.
Archibuteo lagopus, 131.
Ardea sp., 173, 181.
—— alba, 173, 181.
—— —— modesta, 52.
—— amissa, 145.
—— asha, 173, 181.
—— bubulcus, 198.
—— candidissima, 307, 325, 334.
—— cinerea, 173, 181, 198, 354, 434.
—— egretta, 512, 533.
—— garzetta, 585.
—— herodias, 311, 325.
—— javanica, 52.
—— —— stagnatilis, 52.
—— paloccidentalis, 271.
—— purpurea, 198, 420.
—— ralloides, 198.
—— sacra, 211, 215.
—— sumatrana, 420.
—— tricolor, 307, 334.
Ardeola podiceps, 173, 181.
—— prasinosceles, 434.
Ardetta flavicollis, 434.
—— minuta, 198.
—— sinensis, 434.
—— sturmi, 198.
Argus tripunctatus, 156.
Argusianus grayi, 422.
Argya sp., 75, 180.
—— fulva, 377.
Artamides normani, 395.
—— sumatrensis, 396.
Artamus leucogaster, 402.
—— leucorhynchus, 402.
Asio accipitrinus, 131.
—— brachyotus, 196.
—— otus, 196.
Astrapia nigra, 461.
Astur alphonsi, 585.
—— atricapillus, 350.
—— candidissimus, 349.
—— cruentus, 348, 349.
—— henshawi, 350.
—— hensti, 349.
—— moreli, 349.
—— palumbarius, 131, 349.
—— —— albidus, 349.
—— —— buteoides, 349.
—— —— schevedowi, 349.
—— poliopsis, 433.
—— striatulus, 350.
—— trivirgatus, 418.
Asturinula monogrammica, 6.
Auriparus flaviceps, 147.
Aviceda magnirostris, 556.
—— sumatrensis, 557.

Balæniceps rex, 138.
Bambusicola erythrophrys, 563.
Basileuterus rufifrons, 148.
—— —— dugesi, 148.
—— —— jouyi, 148.
Batis molitor, 18, 587.
—— puella, 587.
Batrachostomus affinis, 412.
—— harterti, 412.
—— mixtus, 117, 413.
—— poliolophus, 135.
—— stellatus, 117.
Baza bismarcki, 339, 340.
—— borneensis, 554, 555, 557.
—— ceylonensis, 340, 555, 556.
—— gurneyi, 339.

Baza incognita, 554, 557.
—— jerdoni, 554, 555, 556, 557.
—— leucopais, 340.
—— lophotes, 556.
—— magnirostris, 340, 554, 555, 556, 557.
— reinwardti, 339, 340, 554, 557
sumatrensis, 340, 554, 557.
Berenicornis comatus, 411, 547.
Bernicla brenta, 265.
—— sandvicensis, 463.
Biziura lautouri, 133.
Botaurus neoxenus, 148.
—— pœciloptilus, 533.
—— stellaris, 199.
Bradyornis ater, 21.
pallidus, 21.
Bradypterus cinnamomeus, 16.
—— nyassæ, 16.
Branta propinqua, 271.
Brontornis burmeisteri, 45.
Bubo incertus, 145.
—— orientalis, 416.
Bubulcus ibis, 29.
Bucco caniceps, 237.
—— faiostriatus, 238.
—— faiostrictus, 238.
—— mystacophanus, 238.
—— phaiostictus, 238.
—— viridis, 237.
—— zeylonicus, 237.
Buceros rhinoceros, 410, 547.
Buchanga assimilis, 21.
—— atra, 429.
—— ——, var. assimilis, 224.
—— cineracea, 429.
—— leucogenys, 429.
—— stigmatops, 395, 551.
Bulweria columbina, 207.
Burnesia sonitans, 427.
—— superciliaris, 385, 550, 560.
Butastur indicus, 52, 419, 562.
Buteo abbreviatus, 343.
albicaudatus, 321.
colonus, 304, 321, 332.
—— alleni, 343.
—— borealis, 343.
Buteo borealis harlani, 343.
costaricensis, 343.
— desertorum, 196, 377, 379.
—— erythronotus, 343.
—— hemilasius, 433.
—— krideri, 343.
—— lineatus, 343.
—— lucasanus, 343.
—— menetriesi, 379.
—— minor, 379.
—— plumipes, 433.
—— pœcilochrous, 343.
—— socorroensis, 343.
—— solitarius, 111.
—— swainsoni, 343, 579.
—— vulgaris, 196.
—— zimmermannæ, 379.
Butorides mauritianus, 585.
—— striata, 307.
—— virescens, 307, 325, 334.

Cabalus dieffenbachi, 253, 255, 262, 445, 446, 523, 531, 532, 544.
—— modestus, 253, 255, 445, 523, 532, 544, 546.
—— sylvestris, 262.
Caccabis chukar, 166, 181.
—— magna, 441.
—— melanocephala, 166, 181.
—— petrosa, 201.
—— rufa, 201.
Cacomantis merulinus, 414, 433.
Calandrella minor, 194.
Calidris arenaria, 171, 181, 205, 437.
Callene anomala, 6, 14.
Calliste whitelyi, 288.
Calodromus elegans, 256.
Calopelia puella, 588.
Caloperdix borneensis, 117, 423.
—— oculea, 117, 118.
—— sumatrana, 118.
Calorhamphus fuliginosus, 239, 414, 547.
—— hayi, 234, 239.
Calornis chalybea, 402, 561.
—— corvina, 252.
Calypte costæ, 580.
Calyptomena hosii, 404, 547, 549.
—— viridis, 404, 548.
—— whiteheadi, 404, 591.
Campophaga culminata, 119.
—— hartlaubi, 21.
—— minor, 119.
—— nigra, 20.
—— saturata, 426, 429.
Campothera malherbii, 11.
—— smithii, 11.
Campylopterus hemileucurus, 368, 369.
Cannabina linota, 149.
Capito lineatus, 237.
Caprimulgus sp., 69, 180.
—— asiaticus, 456.
—— concretus, 407.
—— europæus, 229.
—— macrurus, 406.
Carcineutes melanops, 409, 548.
Carduelis elegans, 149, 192, 592.
Carine sp., 68, 180.
—— capensis, 7.
—— glaux, 377.
Carpococcyx radiatus, 415, 548.
Carpophaga ænea, 421.
—— ænothorax, 589.
—— badia, 421.
—— chathamensis, 527, 543.
—— chathamica, 527.
—— forsteri, 588.
—— novæ-zealandiæ, 527.
—— oceanica, 212, 215.
—— pacifica, 215.
—— pœcilorrhoa, 588.
Castanolimnas canningi, 260.
Catamenia analis, 469, 485.
Cathartes atratus, 285.
aura, 285.
Centrococcyx eurycercus, 416.
—— javanensis, 416.
Centropus sp., 73, 180.
—— bengalensis, 433.
—— natalensis, 10.
—— sinensis, 416, 433.
—— superciliosus, 10, 228.

Cepphus mandti, 149.
Cercomela fusca, 77.
Cercotrichas melanoptera, 75, 180.
Cereopsis novæ-zealandiæ, 133.
Certhiola barbadensis, 312.
—— newtoni, 312, 313.
—— sancti-thomæ, 312.
—— uropygialis, 295, 312, 313, 327, 337.
Ceryle guttata, 273, 433.
—— guttulata, 273.
—— lugubris, 273.
—— rudis, 8, 217, 227, 433.
Cettia cantans, 48.
—— cantillans, 48.
—— oreophila, 591.
Ceyx dillwynni, 409.
—— euerythra, 409, 548.
—— rufidorsa, 409.
Chætura coracina, 406, 552.
—— gigantea, 406.
—— leucopygialis, 406.
—— pelagica, 88, 93, 368.
—— rufitorques, 366.
—— rutila, 366.
Chalcococcyx xanthorhynchus, 415.
Chalcomitra gutturalis, 17.
Chalcopelia afra, 231.
Chalcophaps indica, 421, 435.
—— stephani, 483.
Chalcostetha insignis, 399.
Chamæpelia buckleyi, 589.
Chaptia malayensis, 395.
Charadrius bicinctus, 528.
—— cantianus, 53, 436.
—— —— dealbatus, 53.
—— fulvus, 53, 213, 424, 436.
—— geoffroyi, 436.
—— helveticus, 436.
—— minor, 53.
—— mongolicus, 436.
—— pluvialis, 169, 181, 355.
—— squatarola, 307.
Chasiempis ridgwayi, 570.
Chasiempis sandwichensis, 109, 570.
—— sclateri, 570.
Chaulelasmus streperus, 586.
Chelidon urbica, 192, 476.
Chenopis sumnerensis, 545.
Chersophilus duponti, 458.
Chibia borneensis, 395.
Chionis alba, 286.
Chlamydodera cervinventris, 248.
—— maculata, 248.
Chloridops kona, 104, 439, 463.
Chlorocharis emiliæ, 386, 591.
Chloropsis cyanopogon, 392.
—— kinabaluensis, 392, 551.
—— lazulina, 428, 429.
—— viridinucha, 392, 551.
—— zosterops, 392, 547, 551.
Chlorostilbon atala, 299, 319.
—— caribæus, 299, 319, 328.
—— splendidus, 286.
Chordeiles virginianus, 369.
Chotorhea chrysopogon, 239.
—— chrysopsis, 239, 413.
—— corvina, 239.
—— javensis, 239.
—— mystacophanes, 239.
—— versicolor, 239, 413.
Chrysococcyx cupreus, 9, 228.
—— klaasi, 9.
—— lucidus, 528.
Chrysocolaptes validus, 407.
Chrysolampis moschitus, 299.
—— mosquitus, 299, 319, 328.
Chrysomitris icterica, 485.
—— uropygialis, 586.
Chrysophlegma humii, 407, 548, 552.
Chrysophlegma malaccense, 407, 548.
Chrysotis canifrons, 293, 301, 303, 326, 566, 567.
—— ochroptera, 123, 124, 301, 328, 329, 330, 566, 567.
—— rothschildi, 123, 303, 328, 329, 566, 567.
Chrysuronia ruficollis, 298.
Cichloselys sibiricus, 273.
Ciconia alba, 189.
—— nigra, 576.
Cinnyris cupreus, 17.
—— falkensteini, 16.
—— gutturalis, 17.
—— neophilus, 118.
—— notatus, 118.
—— pectoralis, 389, 551.
—— rhizophoræ, 428, 430.
Circus æruginosus, 433.
—— gouldi, 527.
—— hamiltoni, 133.
—— humbloti, 348.
—— macrosceles, 347, 348.
—— macrurus, 433.
—— maillardi, 347.
—— melanoleucus, 347, 433.
—— philippensis, 347.
—— spilonotus, 347, 433.
—— tasmanensis, 133.
Cindops anna, 483.
Cissa jefferyi, 403.
Cisticola cinerascens, 15.
—— cisticola, 48, 428.
—— orientalis, 15, 16.
—— subruficapilla, 15, 225.
Cittocincla melanura, 279, 280.
—— stricklandi, 384.
—— suavis, 384.
—— tricolor, 279, 280, 427.
Cleptornis marchii, 136.
Cnemiornis gracilis, 133.
minor, 133.
Coccopygia dufresnii, 28.
Coccothraustes vulgaris, 49.
Coccystes sp., 73, 180.
—— cafer, 10.
—— coromandus, 415.

Coccystes hypopinarius, 10.
—— jacobinus, 10.
Coccyzus melanocoryphus, 469.
Cœreba cyanea, 247.
—— flaveola, 246.
—— uropygialis, 295.
Colaptes auratus, 124, 125.
—— cafer, 124.
—— hybridus, 125.
—— mexicanus, 124, 126.
Colius affinis, 229.
Collocalia fuciphaga, 405.
—— linchi, 406, 552.
—— lowi, 406.
Columba sp., 544.
—— albipennis, 589.
—— australis, 211.
—— bollei, 200.
—— corensis, 123, 332, 333.
—— crissalis, 588.
—— grisea, 589.
—— gymnophthalma, 123, 304, 322, 332.
—— ianthina, 51.
—— laurivora, 200.
—— livia, 165, 181, 199, 231, 354.
—— palumbus, 323, 354.
—— picazuro, 322, 468.
—— plumbea, 324.
—— portoricensis, 324, 332.
Columbigallina passerina, 304, 305, 326.
—— —— insularis, 305.
—— —— pallescens, 305.
—— —— perpallida, 304, 325, 334.
—— —— purpurea, 304.
—— —— socorrensis, 305.
—— —— terrestris, 304, 453.
—— trochila, 305.
Colymbus nigricans, 272.
—— septentrionalis, 130.
Compsospiza garleppi, 208, 209.
Conurus æruginosus, 123, 249, 300, 301, 320.
—— arubensis, 249, 300, 301.
—— enops, 453.
Conurus finschi, 264.
—— holochlorus, 122.
—— pertinax, 123, 249, 293, 300, 301, 320, 326, 331, 332, 337.
—— rubritorques, 122, 123.
—— wagleri, 122.
—— xanthogenius, 123, 331.
Copsychus musicus, 383.
—— saularis, 427.
Coracias abyssinicus, 72, 180.
—— affinis, 149.
—— caudatus, 7, 227.
—— garrulus, 71, 180, 195, 228.
—— indicus, 149.
Coriphilus taitianus, 215.
Corone macrorhyncha, 561.
Corvultur albicollis, 5, 22.
Corvus annectens, 271.
—— capellanus, 80.
—— corax, 80, 180, 352, 456, 458.
—— cornix, 352.
—— corone, 270.
—— culminatus, 79, 180.
—— levaillanti, 431.
—— macrorhynchus, 49.
—— —— levaillanti, 49.
—— scapulatus, 224.
—— splendens, 79, 224.
—— tenuirostris, 402.
—— tingitanus, 186, 194, 458.
—— torquatus, 431.
—— tropicus, 111, 463.
Corydon sumatranus, 405, 548.
Coryphospingus cristatus, 484.
Corythaix livingstonii, 9.
—— porphyreolopha, 9.
Corythocichla crassa, 591.
Cosmetornis vexillarius, 7.
Cossypha caffra, 14.
—— heuglini, 14.
—— natalensis, 14.
Coturniculus peruanus, 484.
Coturnix communis, 116, 167, 181, 201, 231, 436.
Coturnix delegorguei, 116, 168, 181.
—— mexicana cristata, 306.
—— novæ-zealandiæ, 127, 514.
Cotyle concolor, 69.
—— obsoleta, 69, 180.
—— riparia, 192.
Cranorrhinus corrugatus, 410.
Craspedophora intercedens, 461.
Crateropus kirki, 13.
Crax sclateri, 285.
Creadion carunculatus, 519.
Crecopsis egregia, 260.
Crex crex, 29.
—— pratensis, 172, 181, 202, 355, 482.
Criniger diardi, 390, 547, 551.
—— finschi, 390, 547, 551.
—— gutturalis, 390, 547, 551.
—— pallidus, 252, 429.
—— phæocephalus, 390.
—— ruficrissus, 390, 547, 551.
Crossoptilon auritum, 250.
—— harmani, 250.
—— leucurum, 250.
—— manchuricum, 251.
—— tibetanum, 250.
Crotophaga sulcirostris, 123, 320.
Crypsirhina nigra, 55, 252, 431.
Cryptolopha bicolor, 55, 252, 428.
—— montis, 263.
—— nigrorum, 155.
—— schwaneri, 398, 551.
—— trivirgata, 591.
—— xanthopygia, 263.
Cryptophaps pœcilorrhoa, 588.
Cryptospiza reichenowi, 26.
Cuculus canorinus, 414.
—— canorus, 51, 72, 180, 195, 414.
—— clamosus, 9.
—— klaasi, 9.
—— micropterus, 433, 553.

Cuculus poliocephalus, 591.
—— sonnerati, 414.
Culicicapa ceylonensis, 398, 551.
Cursorius sp., 168, 181.
—— gallicus, 203.
Cyanecula wolfi, 188.
Cyanoderma bicolor, 386, 547, 550.
Cyanomyia guerrerensis, 134.
—— viridifrons, 134.
Cyanops armillaris, 239.
—— asiatica, 239.
—— cyanotis, 239.
—— davisoni, 239.
—— duvauceli, 239.
—— eximia, 239.
—— faber, 239, 426, 432.
—— flavifrons, 239.
—— franklini, 239.
—— henrici, 239, 413.
—— incognita, 239.
—— monticola, 239, 413.
—— mystacophanes, 413.
—— nuchalis, 239.
—— oorti, 239.
—— phæostriata, 238.
—— pulcherrima, 239.
—— ramsayi, 239.
Cyanorhamphus auriceps, 526.
—— cooki, 466.
—— erythronotus, 215.
—— erythrotis, 133, 134, 280, 281, 467.
—— forbesi, 526, 543.
—— hochstetteri, 134, 280, 281, 467.
—— novæ-zealandiæ, 134, 280, 466, 526.
—— rayneri, 466, 585.
—— saisseti, 134.
—— ulietanus, 215.
Cymbirhynchus macrorhynchus, 405.
Cymborhynchus macrorhynchus, 548.
Cyphorhinus lawrencii, 263.
—— richardsoni, 263.
Cypselus sp., 69, 180.
—— affinis, 456, 458.
—— apus, 369.
—— melba, 195.
—— pallidus, 195.
—— unicolor, 194.
Delattria margarethæ, 134.
—— sybillæ, 134.
Dendrocitta cinerascens, 402.
—— sinensis, 431.
Dendrocopus cabanisi, 431.
—— major, 131.
—— minor, 131.
Dendrœca capitalis, 312.
—— rufopileata, 295, 311, 327.
Dendroica petechia flaviceps, 453.
—— rufopileata, 295.
Dendrophila corallipes, 393, 551.
Dendropicus zanzibari, 12.
Diaphorapteryx hawkinsi, 254.
Dicæum chrysorrhœum, 401, 552.
—— cruentatum, 431.
—— cyanonotum, 470.
—— ignipectus, 470.
—— monticola, 400.
—— monticolum, 551.
—— nigrimentum, 400.
—— trigonostigma, 551.
—— wilhelminæ, 129.
Didus ineptus, 585.
Dilophus carunculatus, 80, 180.
Diomedea bulleri, 572.
—— cauta, 572.
—— culminata, 572.
—— exulans, 541.
—— gilliana, 573.
—— immutabilis, 448.
—— melanophrys, 541.
—— regia, 127.
Diphyllodes chrysoptera septentrionalis, 140.
Dissemurus platurus, 395, 547.
Drepanis aurea, 282.
Dromas ardeola, 170, 181, 233.
Drymocataphus capistratoides, 387, 547.
Drymœca affinis, 15.
—— saharæ, 459.
Dryobates scalaris bairdi, 580.
Dryolimnas cuvieri, 260.
Dryonastes monachus, 426, 427.
Dryoscopus cubla, 20.
Dryoscopus major, 587.
—— sticturus, 20.
Dynamopterus velox, 145.

Edoliosoma tenuirostre, 143.
Elainea albiceps, 469, 596.
—— martinica, 318.
—— —— riisii, 318, 337.
—— riisii, 318.
Elanus cæruleus, 67, 180.
Elaphrocnemus crex, 145.
—— gracilis, 145.
—— phasianus, 145.
Emberiza aureola, 431.
—— cia, 448.
—— flaviventris, 27.
—— fucata, 431.
—— miliaria, 194.
—— orientalis, 27.
—— personata, 50.
—— pusilla, 117.
—— saharæ, 375, 376, 377.
—— sahari, 375, 376, 377.
—— striolata, 375.
Empidonomus aurantio-atro-cristatus, 487.
Enneoctonus collurio, 19.
Eremomela scotops, 16.
Erismatura australis, 270.
Erithacus calliope, 428.
—— cyane, 383, 560.
—— cyaneus, 383.
—— luscinia, 225.
—— namiyei, 47.
—— rubecula, 189.
—— sibilans, 136, 428.
—— superbus, 188, 189.
Erythra phœnicura, 423.
Erythromyias muelleri, 396, 551.
Erythropygia ruficauda, 15.
—— zambesiana, 15.
Erythrospiza githaginea, 194.
Erythrotriorchis doriæ, 340.
Erythrura regia, 156.
Estrelda dufresnei, 26.
—— phœnicotis, 226.

Estrelda rufibarba, 82, 180.
Estrilda angolensis, 26.
—— minor, 26.
Eucichla baudi, 489, 491, 492, 507, 508.
—— boschi, 488, 489, 491, 492, 493, 506, 507, 508.
—— cyanea, 491, 506, 507.
—— cyanura, 491, 493, 508.
—— ellioti, 492, 507.
—— gurneyi, 491, 492, 507, 578.
—— schwaneri, 491, 508, 547, 578.
Eudromias morinellus, 139, 203, 569.
Eudynamis honorata, 433.
—— taitensis, 510, 525.
Eudyptes pachyrhynchus, 543.
Eudyptula minor, 543.
Euetheia bicolor, 314, 315, 316, 317, 440.
—— marchi, 314, 315, 316.
—— omissa, 315, 317.
—— sharpei, 295, 314, 315, 316, 317, 328, 440.
Eugenes fulgens, 147.
Eulabes javanensis, 402.
Eupetes geislerorum, 140.
—— macrocercus, 388, 550.
Eupherusa nigriventris, 134.
Euplocamus ignitus, 422.
—— nobilis, 422.
—— pyronotus, 422.
Eupodotis arabs, 168, 181.
Eupsychortyx cristatus, 305, 306, 325, 338.
—— gouldi, 305, 306, 324.
—— sonninii, 306, 307, 338.
Eurylæmus javanicus, 405.
—— ochromelas, 405, 548.
Eurynorhynchus pygmæus, 136, 273, 437.
Eurystomus afer, 8.
Eurystomus calonyx, 432, 561, 562.
—— lætior, 237.
—— orientalis, 411, 561, 562.
Eustephanus galeritus, 596.
Euxenura maguari, 596.
Excalfactoria chinensis, 423.

Falco æsalon, 353, 456.
—— barbarus, 64, 116, 180.
—— belisarius, 377.
—— buteo, 379.
—— cirtensis, 377.
—— communis, 116, 433, 559.
—— feldeggi, 377.
—— fusco-cærulescens, 488.
—— melanogenys, 559.
—— minor, 7.
—— pealei, 343.
—— peregrinus, 64, 180, 332.
—— punicus, 65, 185, 197, 377.
—— severus, 562.
—— vespertinus, 197.
—— (Lophotes) reinwardti, 557.
Filholornis debilis, 145.
—— gravis, 145.
—— pardaxa, 145.
Francolinus chinensis, 435.
—— granti, 231.
Fratercula arctica, 207, 358.
Fregata aquila, 215, 308, 326, 336.
—— minor, 308.
Fringalauda nemoricola, 378.
Fringilauda nemoricola, 378.
Fringilla africana, 377.
—— altaica, 378.
—— bicolor, 316.
—— canariensis, 193.
—— cœlebs, 458.
—— palmæ, 193.
—— spodiogena, 377.
—— spodiogenys, 458.
—— teydea, 193.
—— zena, 316.
Fringillaria flaviventris, 27.
—— orientalis, 27.
—— poliopleura, 156.
—— sahara, 376.
—— saharæ, 375, 376.
—— sahari, 376.
Fringillauda altaica, 378.
Fulica atra, 202, 355, 436.
—— minor, 271.
—— newtoni, 544, 545, 585.
Fuligula ferina, 199.
—— novæ-zealandiæ, 545.
Funingus (Alectorœnas) nitidissimus, 585.

Galerita cristata, 458.
—— macrorhyncha, 458.
—— randoni, 458.
Gallicrex cinereus, 436.
Gallinago aucklandica, 446, 447.
—— chathamica, 545.
—— cœlestis, 171, 181, 204, 355.
—— delicata, 563.
—— huegeli, 447.
—— pusilla, 445, 446, 447, 529, 545, 546.
—— stenura, 436.
Gallinula chloropus, 53, 202, 436.
—— nesiotis, 126.
—— sandvicensis, 463.
Gallirallus brachypterus, 259.
—— fuscus, 259.
Gallirex chlorochlamys, 9, 228.
Gallus bankiva, 215.
—— ferrugineus, 435.
Gampsonyx swainsoni, 264.
Garrodia nereis, 542, 546.
Garrulax moniliger, 426, 427.
—— pectoralis, 427.
—— schistochlamys, 385.
Garrulus atricapillus, 377.
—— cervicalis, 377.
—— glandarius, 146, 476.

Garrulus glandivorus, 476.
Gauropicoides rafflesii, 408, 548.
Gecinus puniceus, 552.
—— vaillanti, 377.
Geocichla everetti, 383, 560.
—— gurneyi, 13.
Geoffroyus jukesi, 141.
—— tjindanæ, 141.
Geophaps plumifera, 570.
Geotrygon venezuelensis, 588.
Geranopsis elatus, 145.
Geranopterus alatus, 145.
Gerygone albofrontata, 524.
—— flaveola, 561.
—— flaviventris, 510.
—— magnirostris, 373, 374, 375.
—— modiglianii, 119, 561.
—— pectoralis, 119, 561.
—— salvadorii, 561.
—— sulphurea, 561.
Gigantipitta cærulea, 494.
Glareola ocularis, 232.
—— orientalis, 423.
—— pratincola, 150, 151, 202.
Glaucidium borneense, 548, 549, 562, 569.
—— brodiei, 549, 550, 569.
—— capense, 7.
—— pardalotum, 550.
—— siju, 180.
—— sylvaticum, 549, 550, 562, 569.
Glaucopis cinerea, 519.
Goura beccarii huonensis, 583.
Gracula javanensis, 402.
Graculus africanus, 533.
—— neglectus, 279.
Graminicola bengalensis, 54.
—— striata, 54, 426, 427.
Graucalus macii, 429.
—— pectoralis, 21.
Grus canadensis, 444.
—— cinerea, 180.
—— longirostris, 444.
Grus mexicana, 444.
Gygis candida, 215.
Gyps fulvus, 63, 64, 180, 448.

Habrura pectoralis, 486.
Hæmatopus capensis, 204.
—— ostralegus, 170, 181, 355.
—— palliatus, 308, 325.
—— unicolor, 545.
Hæmatortyx sanguineiceps, 423.
Halcyon albicilla, 156.
—— chelicutensis, 8.
—— chloris, 409.
—— concreta, 409, 548.
—— coromanda, 409.
—— cyanoleuca, 8.
—— orientalis, 8.
—— pileata, 409, 433.
—— semicæruleus, 72, 116, 180.
—— smyrnensis, 433.
—— sordidus, 585.
Haliaetus albicilla, 185, 197, 353.
—— leucogaster, 66, 180, 419.
Haliastur intermedius, 419.
Hapalocercus flaviventris, 486.
Haplopelia johnstoni, 28.
—— larvata, 28.
Harpa ferox, 544.
—— novæ-zealandiæ, 544.
Harpactes diardi, 412, 552.
—— duliteneis, 412, 561.
—— duvauceli, 412, 547.
—— erythrocephalus, 252, 426, 433, 547.
—— kasumba, 412, 547.
—— vidua, 412.
—— whiteheadi, 411
Harporhynchus lecontei, 580.
—— rufus, 308.
Heliomaster furcifer, 286.
Heliopais personata, 430.
Heliornis fulica, 430.
—— surinamensis, 30, 32, 35, 36, 37, 39.
Helminthophila chrysoptera, 149.
Helminthophila lawrencii, 149.
—— leucobronchialis, 149.
—— pinus, 149.
Helodromas ochropus, 172, 181.
Helotarsus caudatus, 142.
Hemicercus sordidus, 407, 548.
Hemignathus affinis, 112, 249.
—— hanapepe, 112
—— lanaiensis, 256, 263.
—— lichtensteini, 566.
—— lucidus, 568.
—— obscurus, 105, 256, 257.
—— olivaceus, 108.
Hemilophus pulverulentus, 408.
Hemipus capitalis, 395.
—— obscurus, 551.
—— fucatus, 395, 551.
Hemixus canipennis, 428.
—— castanonotus, 426, 428.
—— connectens, 390, 547, 550.
—— malaccensis, 390, 547, 550.
Henicopernis infuscata, 347.
—— longicauda, 347.
Herodias garzetta, 434
Herpornis brunnescens, 550.
—— tyrannulus, 252, 428.
Heteralocha gouldi, 158.
Heteroscops luciæ, 417.
Heterotis humilis, 430.
—— rueppelli, 430.
—— vigorsi, 449.
Hierax eutolmos, 307.
Hierococcyx nanus, 414.
Himantopus candidus, 204.
—— mexicanus, 148, 323, 334.
Himatione aurea, 252.
—— dana, 105, 443.
—— montana, 443.
—— newtoni, 443.
—— sanguinea, 105, 109.
—— stejnegeri, 443.
—— virens, 105, 443.
—— wilsoni, 443.
Hirundo astigma, 19.
—— erythrogastra, 317.
—— javanica, 389.

Hirundo puella, 19.
—— rufula, 458.
—— rustica, 68, 180, 192, 352, 561.
—— semirufa, 19.
—— sociabilis, 476.
—— urbica, 352.
Histriophaps histrionica, 588.
Homopelia picturatus, 588.
Hoplopterus spinosus, 277.
Houbara macqueeni, 168, 181.
Houbaropsis bengalensis, 450.
Hydrocichla frontalis, 384.
—— ruficapilla, 384, 547, 548, 550.
—— rufidorsalis, 548.
Hydrornis nipalensis, 493, 494.
—— oatesi, 494.
—— soror, 493, 494.
Hylocharis sapphirina, 285, 286.
Hyloterpe grisola, 395, 551.
—— hypoxantha, 395.
—— whiteheadi, 551.
Hypargus niveiguttatus, 27.
Hyphantornis bertrandi, 23.
—— bojeri, 225, 226.
—— cabanisi, 24.
—— galbula, 80, 180, 226.
—— heuglini, 23.
—— jamesoni, 23.
—— nigriceps, 23.
—— ocularius, 23.
—— xanthops, 23.
—— xanthopterus, 24.
Hypochera nigerrima, 25.
—— ultramarina, 25.
Hypocolius ampelinus, 74, 180.
Hypoloxias aurea, 282.
Hypothymis azurea, 430.
—— occipitalis, 397, 430, 547.
Hypsipetes amaurotis hensoni, 273.
—— perniger, 426, 429.
—— squamiceps, 48.
—— —— pryeri, 48.
Hytiopus magnirostris, 556.
Ianthœnas puniceus, 252.
Ibidorhynchus kaufmanni, 444.
—— struthersi, 155, 597.
Ibis sp., 174, 181.
—— æthiopica, 232.
—— calvus, 377.
—— comata, 377.
—— melanocephala, 136, 434.
Icterus curaçaoensis, 295, 317.
—— icterus, 297, 317, 337.
—— vulgaris, 123, 296, 297, 317.
—— xanthornis, 295, 296, 297.
—— —— curaçaoensis, 295, 317, 328.
Indicator archipelagicus, 414.
—— variegatus, 10.
Iole olivacea, 389, 547, 550.
Irena crinigera, 392, 547.
Irrisor cyanomelas, 9.
—— erythrorhynchus, 8.
—— viridis, 8, 227.
Ithaginis cruentus, 597.
Ixos hainanus, 136.
Iyngipicus kaleensis, 431.
—— kisuki, 51.
—— —— nigrescens, 51.
Iynx pectoralis, 586.
—— torquilla, 586.

Kenopia striata, 387.
Ketupa javanensis, 416.
Kittlitzia monasa, 267.

Lagonosticta niveiguttata, 27.
—— rhodoparia, 26.
Lalage culminata, 119, 396, 547.
—— terat, 396.
Lampornis violicauda, 286.
Lamprococcyx plagosus, 375.
Lamprocolius sycobius, 22.
Laniarius cubla, 20.
—— sulphureipectus, 20.
Lanius sp., 74, 180, 224.
—— algeriensis, 191, 444.
Lanius auriculatus, 476.
—— bogdanowi, 378, 379.
—— borealis, 454.
—— collaris, 19.
—— collurio, 20.
—— excubitor, 224, 454.
—— fuscatus, 429.
—— homeyeri, 454.
—— lahtora, 73, 74, 180, 224.
—— lucionensis, 393, 560.
—— major, 454.
—— nubicus, 73, 180.
—— pomeranus, 192.
—— raddei, 379.
—— ruficapillus, 476.
—— schach, 429.
—— superciliosus, 429.
—— tyrannus dominicensis, 319.
Larus sp., 175, 181.
—— argentatus, 206, 357.
—— atricilla, 311, 326, 337.
—— audouini, 377.
—— brunneicephalus, 175, 181.
—— bulleri, 530.
—— cachinnans, 53, 206.
—— canus, 206, 356.
—— dominicanus, 511, 529.
—— eburneus, 149.
—— franklini, 147.
—— fuscus, 206, 356.
—— hemprichi, 176, 181, 233.
—— ichthyaëtus, 132, 175, 181.
—— marinus, 206.
—— maximus, 356.
—— melanocephalus, 448.
—— oregonus, 271.
—— ridibundus, 176, 181, 356, 440.
—— robustus, 271.
—— saundersi, 136, 437.
—— scopulinus, 529.
Lathria streptophora, 288.
Leistes superciliaris, 485.
Lepocestes porphyromelas, 407, 548.
—— pyrrhotis, 426, 431.

Leptoptila megalura, 589.
—— verreauxi, 305, 324, 334.
Lestris hardyi, 213.
Leucippus chionogaster, 286.
Leucochloris albicollis, 286.
Leucopternis albicollis, 341.
—— occidentalis, 341.
—— plumbea, 341.
—— princeps, 341.
—— schistacea, 341.
—— semiplumbea, 339, 340.
—— superciliaris, 341.
Leucosticte tephrocotis, 580.
Lichenops perspicillatus, 469.
Limnocinclus acuminatus, 185.
Limnocorax niger, 29, 233.
Limnogeranus americanus, 439.
Limosa ægocephala, 205.
—— lapponica, 205.
—— melanuroides, 437.
—— novæ-zealandiæ, 529.
Linota cannabina, 193.
—— flavirostris, 352.
Lobiophasis bulweri, 422, 548.
Lophastur jerdoni, 557.
Lophoaetus occipitalis, 6.
Lophoceros melanoleucus, 8, 227.
Lophopsittacus mauritianus, 585.
Lophornis adorabilis, 134.
—— pavoninus, 288.
Lophotriccus subcristatus, 125.
Lophotriorchis kieneri, 419.
Loriculus bonapartii, 155.
—— galgulus, 416, 548, 552.
Lorius tibialis, 155.
Loxia bifasciata, 146.
Loxioides bailleui, 103, 439.
Loxops aurea, 282.
Loxops coccinea, 112, 113, 282, 570.
—— flammea, 112.
—— ochracea, 112, 249, 281, 282, 570.
—— wolstenholmei, 570.
Lusciniola fuscata, 428.
Lycocorax obiensis, 461.
Lyncornis temmincki, 553.

Machærhamphus alcinus, 419.
Machærirhamphus alcinus, 344, 419.
—— anderssoni, 344.
—— revoili, 344.
Machetes pugnax, 205.
Macronus ptilosus, 387, 547.
Macronyx croceus, 27.
—— striolatus, 27.
Macropteryx comatus, 406.
—— coronata, 368.
—— klecho, 369.
—— longipennis, 406.
—— mystacea, 366.
Macropygia goldiei, 588.
—— minor, 435.
—— ruficeps, 421.
—— swinhoei, 426, 435.
Malacopterum affine, 547.
—— cinereum, 547, 550.
—— magnum, 547.
—— melanocephalum, 119.
Malimbus rubriceps, 24.
Malurus numidicus, 377.
Manucodia chalybeata, 461.
—— comrii, 269.
Mareca penelope, 199.
Margarops fuscatus, 123, 327, 337.
—— —— densirostris, 327.
Mecistura irbyi caucasica, 242.
Megalæma caniceps, 236.
—— chrysopsis, 413, 547, 552.
—— henricii, 413.
—— hodgsoni, 237.
—— inornata, 237.
—— lagrandieri, 237, 239.
—— lineata, 236.
Megalæma marshallorum, 235, 236, 239.
—— mystacophanos, 413, 547.
—— phæostriata, 238.
—— versicolor, 277, 413.
—— virens, 235, 236, 239.
—— viridis, 236.
—— zeylonica, 236.
Megatriorchis doriæ, 340.
Melanobucco irroratus, 11.
—— torquatus, 10, 11.
—— zombæ, 6, 10.
Melanocorypha calandra, 194.
Melanoperdix nigra, 423, 552.
Melierax canorus, 345.
—— gabar, 6, 345.
—— mechowi, 345.
—— musicus, 345.
—— niger, 345.
—— poliopterus, 344.
—— polyzonus, 67, 180, 345.
Melittophagus sp., 152.
—— albifrons, 152.
—— gularis, 151.
—— —— australis, 151.
—— meridionalis, 7.
Melocichla mentalis, 15.
Menura alberti, 160.
—— superba, 160.
—— victoriæ, 146.
Mergus serrator, 53.
Meropiscus australis, 151.
—— gularis australis, 151.
Merops sp., 71, 180.
—— apiaster, 7, 195.
—— cyanophrys, 70, 71, 180.
—— mentalis, 152.
—— muelleri, 152.
—— nubicus, 227.
—— persicus, 70, 71, 180.
—— pusillus, 7.
—— sumatranus, 411, 426, 432.
—— superciliosus, 7.
Merula alpestris, 589.
—— cardis, 427.
—— celebensis, 222, 452.
—— celœnops, 222.
—— chrysolaus, 47.
—— erythrotis, 480.

Merula fumida, 219, 220.
—— javanica, 219, 220, 221, 452.
—— kessleri, 444.
—— mandarina, 427.
—— pallens, 47.
—— pallida, 47.
—— papuensis, 258.
—— schlegeli, 221, 452.
—— seebohmi, 222, 591.
—— torquata, 589.
—— whiteheadi, 221, 257.
Mesobucco cyanotis, 238.
—— duvauceli, 238, 413, 547, 552.
—— eximius, 238, 414, 547, 552.
Metallura atrigularis, 449.
—— baroni, 449.
—— primolina, 449.
Microhierax chinensis, 346.
—— erythrogenys, 346.
—— fringillarius, 346, 420.
—— latifrons, 347, 559.
—— melanoleucus, 346.
—— sinensis, 346.
Micropternus badiosus, 548.
—— holroydi, 426, 431.
Micropus melanocephalus, 389.
—— melanoleucus, 97, 98, 389, 560.
Microtribonyx ventralis, 261.
Miglyptes grammithorax, 548.
—— tukki, 548.
Milvulus tyrannus, 469.
Milvus sp., 229.
—— ægyptius, 7, 67, 180.
—— govinda, 67.
—— ictinus, 197.
Mimus gilvus rostratus, 294, 311, 327.
—— triurus, 469, 483, 595.
Mionectes semischistaceus, 129.
Mirafra sp., 84, 180.
Miro albifrons, 511, 519.
—— traversi, 524.
Mixornis bicolor, 386.
Molothrus bonariensis, 596.
Monticola cyanus, 48, 74, 180, 427.
—— —— solitarius, 48.
—— solitarius, 427.
Montifringilla altaica, 377, 378.
—— murrayi, 378.
—— sordida, 378.
Motacilla alba, 78, 180, 190.
—— boarula, 49.
—— feldeggi, 79, 180.
—— flava, 225.
—— grandis, 273.
—— leucopsis, 428.
—— longicauda, 27.
—— lugens, 273.
—— lugubris, 351.
—— melanope, 116, 190, 428.
—— taivana, 49.
Muelleripicus pulverulentus, 408.
Munia atricapilla, 129.
—— brunneiceps, 401.
—— fuscans, 401, 552.
—— nisoria, 129.
—— oryzivora, 226.
—— topela, 431.
Muscicapa albicilla, 430.
—— atricapilla, 139, 192.
—— grisola, 74, 180, 192.
Muscicapula hyperythra, 396, 551.
Myiarchus brevipennis, 123, 298, 318, 328.
—— ferox, 469, 487.
—— mexicanus, 298.
—— oberi, 123, 298.
—— tyrannulus, 123, 298.
Myiomoira macrocephala, 510, 524.
Myiophoneus borneensis, 383, 550.
Myiotheretes rufiventris, 467, 468.
Myrmecocichla melanura, 77, 180.

Necrobyas harpax, 145.
—— rossignoli, 145.
Nectarinia gadowi, 576.
—— metallica, 73, 180.
Neophron percnopterus, 64, 180, 196.
Neopus malayensis, 563.
Neotis burchelli, 450.
Neotis caffra, 450.
—— denhami, 450.
—— heuglini, 450.
—— ludwigi, 450.
Nesœnas mayeri, 588.
Nestor meridionalis, 514, 517, 544.
—— notabilis, 544.
Nettapus coromandelianus, 435.
Nilaus brubru, 20.
—— capensis, 20.
Niltava cyanomelæna, 430.
Ninox dimorpha, 342.
—— scutulata, 52, 418.
Nisaëtus fasciatus, 185.
Notornis mantelli, 159, 517.
—— parkeri, 133.
Numenius arquata, 171, 181, 205.
—— lineatus, 437.
—— phæopus, 171, 181, 205.
—— tenuirostris, 150.
—— variegatus, 437.
Numida mitrata, 232.
—— pucherani, 232.
—— vulturina, 138.
Nyctea scandica, 131.
Nycticorax griseus, 29, 198, 420, 434.
Nyctiornis amicta, 411, 547.

Oceanites oceanicus, 206.
Oceanodroma cryptoleucura, 463.
Ocydromus australis, 37, 261, 262, 545.
—— brachypterus, 259, 261.
—— earli, 261, 262.
—— fuscus, 261.
—— greyi, 261, 262.
—— insignis, 133.
—— pygmæus, 544.
—— sylvestris, 262, 543.
Œdemia nigra, 256.
Œdicnemus crepitans, 202.
—— magnirostris, 421.
—— scolopax, 169, 181.
Œna capensis, 166, 181.
Œnolimnas isabellinus, 260.
Œstrelata axillaris, 261, 542, 543.
—— cervicalis, 156.

Œstrelata cooki, 264, 572.
—— defilippiana, 571, 572.
—— gouldi, 283.
—— nigripennis, 571.
Oreocincla cuneata, 122.
Oreoctistes leucops, 591.
Oreonympha nobilis, 288.
Oreophilus ruficollis, 596.
Oreotrochilus leucopleurus, 596.
Oriolus brachyrhynchus, 22.
—— diffusus, 429.
—— galbula, 76, 180, 191.
—— hosii, 117, 393.
—— icterus 297.
—— larvatus, 22.
—— maculatus, 560.
—— xanthonotus, 393, 547.
Ornithion pusillum subflavum, 129.
Orthocnemus gallicus, 145.
—— major, 145.
—— minor, 145.
Orthotomus cineraceus, 385, 550.
—— ruficeps, 384, 550.
Ortygometra affinis, 531.
—— tabuensis 531.
Osculatia purpurea, 589.
Osmotreron aromatica, 589.
—— axillaris, 589.
—— domvilii, 426, 435.
—— griseicauda, 589.
—— wallacei, 588, 589.
Ossifraga gigantea, 542.
Otidiphaps insularis, 589.
Otis arabs, 377.
—— tarda, 377, 476.
—— undulata, 292.
Otocompsa montis, 392.
Otomela bogdanowi, 379.
Otus accipitrinus, 433.
—— henrici, 145.
Oxypelia cyanopis, 588, 589.

Pachycoccyx validus, 9.
Pachyprora dimorpha, 6, 18.
—— mixta 18.
—— molitor 18.
Palæo-casuarius elegans, 133.
Palæo-casuarius haasti, 133, 451.
—— velox, 133, 451.
Palæocorax antipodum, 544.
—— moriorum, 254, 543.
Palæolimnas newtoni, 544.
Palæornis derbyanus, 136.
—— fasciata, 433.
—— lathami, 136.
—— longicauda, 416, 548.
—— salvadorii, 573.
Palæortyx cayluxensis, 145.
—— ocyptera, 145.
Palæotetrix gilli, 271.
Palmeria mirabilis, 113, 249.
Palumbus arquatrix, 28.
Pandion haliaetus, 68, 180, 198, 332, 476.
Paradigalla carunculata, 461.
Paradisea apoda, 249, 464, 481, 482.
—— augustæ-victoriæ, 481, 482, 483.
—— decora, 483.
—— finschi, 483.
—— guilelmi-secundi, 450.
—— raggiana, 248, 464, 481, 482.
Paradisornis rudolphi, 461.
Paramythia montium, 243, 244, 249.
Parula pitiayumi, 468.
Parus albiventer, 118.
—— atriceps, 49.
—— —— minor, 49.
—— borealis, 131, 249, 474, 475.
—— cæruleanus, 377.
—— castaneiventer, 49.
—— colletti, 474, 475.
—— hensoni, 273.
—— japonicus, 273.
—— niger, 17, 118.
—— umbrosus 190.
—— palmensis, 190.
—— palustris 249.
—— pleskei, 146.
—— rovumæ 118.
—— seebohmi 273.
—— teneriffæ, 190.
Parus ultramarinus, 190, 377.
—— varius, 49.
—— xanthostomus, 17, 118.
Passer sp., 83, 180.
—— diffusus, 28.
—— domesticus, 543.
—— montanus, 50, 292.
—— petronia, 448.
—— salicicola, 192.
—— swainsoni, 28.
Pediœcetes lucasi, 271.
—— nanus, 271.
Pelagodroma marina 207, 542.
Pelargopsis leucocephala, 408.
Pelecanoides berardi, 542.
—— urinatrix, 541.
Pelecanus fuscus, 328, 329, 336.
—— manillensis, 434.
—— onocrotalus, 179, 181.
Pennula ecaudata, 252, 253, 256, 258, 444.
—— palmeri, 258.
—— sandwichensis, 253, 256, 258.
Penthetria albonotata, 25.
—— ardens, 25.
Pericrocotus elegans, 429.
—— montanus 396.
—— speciosus 429.
—— tegimæ 49.
—— xanthogaster 396, 551.
Pernis apivorus, 180, 198.
—— crassirostris 396.
—— jerdoni, 387.
—— ptilorhynchus 392.
Petronia petronella, 27.
—— stulta, 186.
Peucæa arizonæ, 147.
Phabotreron [illegible], 588.
Phæornis lanaiensis 111.
—— obscura, 110.
Phaethon sp. 181.
—— indicus 179.
Phalacrocorax sp., 179, 181.
—— africanus 278.
—— albiventris, 539, 540.

Phalacrocorax brasilianus, 398, 325.
—— brevirostris, 533.
—— capensis, 278.
—— carbo, 279, 353, 434.
—— caruncultatus, 534, 535, 536, 537, 539, 541.
—— cirrhatus, 533, 537, 541.
—— colensoi, 537, 538, 540.
—— croaticus, 155.
—— featherstoni, 533, 573.
—— graculus, 353.
—— imperialis, 533, 534, 535, 536, 537, 541.
—— lucidus, 278.
—— macropus, 271.
—— neglectus, 278.
—— novæ-hollandiæ, 533.
—— onslowi, 533, 537, 538, 539, 541, 543.
—— pygmæus, 583.
—— rothschildi, 535, 536, 537, 540, 543.
—— verrucosus, 535, 540, 541.
Phalaropus fulicarius, 569.
—— hyperboreus, 145, 356, 569.
—— wilsoni, 569.
Phasianus principalis, 462.
—— satscheunensis, 441.
Philentoma pyrrhopterum, 398, 547, 551.
—— velatum, 397, 547, 551.
Philohela minor, 564.
Phlogœnas sp., 121.
—— albicollis, 121, 588, 589.
—— beccarii, 589.
—— bimaculata, 120.
—— erythroptera, 121, 589.
—— granti, 588, 589.
—— tristigmata, 120.
Phodilus badius, 417.
Phœnicopterus sp., 307, 335.
—— antiquorum, 233.
—— copei, 271.
—— jamesi, 164.
—— roseus, 174, 181, 199.
Pholidauges verreauxi, 22.
Phororhacos longissimus, 42, 44, 45.
Photodilus badius, 417.
Phyllopseustes coronatus, 272.
Phylloscopus sp., 78, 180.
—— borealis, 130.
—— rufus, 190.
—— sibilatrix, 190.
—— superciliosus, 428.
Phytotoma rutila, 469, 487.
Pica caudata, 131.
—— mauritanica, 377.
—— pica, 431.
Picoides tridactylus, 131.
Picumnus innominatus, 560.
—— obsoletus, 125.
Picus algirus, 377.
—— lilfordi, 456.
—— major, 51, 195.
—— martius, 273, 448.
—— noguchii, 50.
—— numidicus, 377.
Pinarocichla euptilosa, 55, 389.
—— schmackeri, 54, 252, 429.
Pipreola whitelyi, 288.
Piprites griseiceps, 264.
Pisorhina solokensis, 441.
Pitangus jamaicensis, 453.
Pitta adoranda, 503.
—— angolensis, 494, 496, 578.
—— arcuata, 403, 490, 491, 502, 503, 547, 552, 578.
—— atricapilla, 490, 491, 498, 499, 578.
—— bangkana, 492, 498, 499.
—— baudi, 404, 507, 552.
—— bertæ, 495.
—— brachyura, 495, 496, 497.
—— cærulea, 494.
—— cæruleitorques, 504, 505.
—— celebensis, 504, 505.
—— coccinea, 502, 503.
—— concinna, 496, 497.
—— crassirostris, 497.
—— cucullata, 489, 492, 497, 498, 500.
Pitta cyanea, 506.
—— cyanonota, 505.
—— cyanoptera, 403, 489, 490, 494, 495, 496, 498.
—— erythrogastra, 490, 491, 492, 493, 502, 504, 505.
—— finschi, 504, 506.
—— forsteni, 490, 499.
—— granatina, 403, 404, 489, 502, 503.
—— irena, 497.
—— iris, 500.
—— kochi, 504, 506.
—— loriæ, 504, 506.
—— mackloti, 504, 505, 506.
—— mafoorana, 500.
—— maxima, 489, 491, 500, 501, 502, 578.
—— megarhyncha, 494.
—— moluccensis, 578.
—— muelleri, 404, 489, 490, 492, 498, 499.
—— nipalensis, 493.
—— novæ-guineæ, 489, 499, 500, 501.
—— nympha, 495, 496.
—— oatesi, 494, 578.
—— oreas, 495.
—— palliceps, 504, 505.
—— propinqua, 504, 505.
—— rosenbergi, 500, 578.
—— rubrinucha, 505.
—— rufiventris, 505.
—— sanghirana, 499.
—— schwaneri, 404.
—— simillima, 497.
—— sordida, 578.
—— soror, 494.
—— steerii, 490, 491, 502.
—— strepitans, 497.
—— ussheri, 489, 490, 491, 502, 503, 504.
—— venusta, 491, 492, 502, 578.
—— vigorsi, 496, 497.
Pityriasis gymnocephala, 393, 551.
Platalea leucorodia, 174, 181, 199.
Platycercus auriceps, 526.
—— cooki, 466.
—— erythrotis, 127, 133.

Platycercus novæ-zealandiæ, 127, 526.
—— unicolor, 127.
Platylophus coronatus, 403, 547.
Platysmurus aterrimus, 403.
Platystira pellata, 18.
Plectrophenax nivalis, 569.
Plegadis falcinellus, 583.
Ploceipasser pectoralis, 24.
Ploceus xanthopterus, 24.
Plotus melanogaster, 420.
—— nanus, 585.
Pluvianus ægyptius, 277.
Podica personata, 439.
—— senegalensis, 30, 31, 33, 34, 35, 37, 38, 39, 439.
Podiceps auritus, 133.
—— cornutus, 38.
—— cristatus, 53.
—— nigricollis, 174, 181.
Podicipes auritus, 133.
Podoa surinamensis, 30.
Podoces panderi, 462.
Pœocephalus fuscicapillus, 12, 229.
—— robustus, 12.
Pogonocichla johnstoni, 18.
—— stellata, 18.
Pogonornis cincta, 283, 517.
Polioaëtus plumbeus, 434.
Poliolimnas cinereus, 260.
Polyborus cheriway, 303, 321, 332.
Polytelis alexandræ, 143.
Polytmus thaumantias, 285, 286.
Pomatorhinus borneensis, 386, 547, 550.
—— musicus, 427.
—— nigro-stellatus, 136, 426, 427.
—— ruficollis, 427.
—— stridulus, 427.
—— styani, 427.
Poospiza cæsar, 208.
—— torquata, 469, 484.
Poospizopsis cæsar, 208.
Porphyrio bellus, 531.
—— chathamensis, 531, 548.
Porphyrio melanonotus, 530.
Porphyriornis comeri, 126.
Porzana bailloni, 201.
—— maruetta, 201, 456.
—— parva, 201.
Porzanula palmeri, 253, 268.
Pratincola dacotiæ, 188.
—— maura, 428.
—— rubetra, 270.
—— rubicola, 270.
—— torquata, 15.
Prinia sp., 78, 180.
—— inornata, 427.
—— mystacea, 15.
—— socialis, 78.
Prion turtur, 542.
—— vittatus, 542.
Prionochilus everetti, 553.
—— maculatus, 401, 561.
—— xanthopygius, 401, 547, 552.
Prionops talacoma, 21.
Priotelus temnurus, 453.
Procellaria leucorrhoa, 206.
—— pelagica, 206.
Progne chalybea, 468.
—— furcata, 595.
—— subis, 368, 369.
Prosthemadera novæ-zealandiæ, 514, 524.
Psarisomus psittacinus, 405.
Psaropholus nigellicauda, 136, 426, 429.
Pseudochloris aureiventris, 596.
Pseudogeranus leucauchen, 439.
Pseudonestor xanthophrys, 438.
Psilopogon pyrolophus, 240.
Psittacirostra psittacea, 103.
Psittacus erithacus, 138, 229.
—— fuscicapillus, 12.
—— robustus, 12.
Psittinus incertus, 416.
Pternistes humboldti, 29.
Pterocles arenarius, 201.
—— exustus, 166, 181.
—— larvatus, 145.
Pterocles lichtensteini, 166, 181.
—— validus, 145.
Pteruthius æralatus, 551.
Ptilocichla leucogastra, 119.
Ptilonopus jambu, 422.
Ptilonorhynchus holosericeus, 149.
—— rawnsleyi, 149.
Ptilopus coronulatus huonensis, 140.
—— eugeniæ, 589.
—— huttoni, 214.
—— jambu, 422, 548.
—— mercieri, 460.
—— musschenbroeki, 121.
—— pectoralis, 121.
—— salvadorii, 121.
—— smithsonianus, 588.
—— tristrami, 460.
Ptilopyga leucogrammica, 388, 547.
—— rufiventris, 388.
Ptilorhis paradisea, 461.
—— victoriæ, 459.
Ptilotis frenata, 143.
Puffinus anglorum, 206.
—— cuneatus, 463.
—— griseus, 542.
—— kuhli, 207, 233.
—— obscurus, 207.
—— persicus, 175, 181.
Pycnonotus analis, 391.
—— arsinoe, 75, 180.
—— hainanus, 426, 428, 469.
—— layardi, 13, 226.
—— plumosus, 391.
—— salvadorii, 391, 547, 551.
—— simplex, 391, 547, 551.
—— sinensis, 469.
—— taivanus, 470.
—— xanthopygus, 75, 180.
—— xanthorrhous, 470.
Pyrocephalus rubineus, 469.
Pyromelana capensis, 26.
—— flammiceps, 25.
—— minor, 26.
—— nigrifrons, 25.
—— xanthomelæna, 25.
Pyrrhocorax graculus, 194.
Pyrrhula griseiventris, 50.

Pyrrhula griseiventris rosacea, 50.
Pyrrhulauda melanauchen, 83, 180.
Pytelia afra, 26.
—— reichenowi, 26.

Querquedula circia, 174, 181, 435.
—— crecca, 174, 181, 199.

Rallina fasciata, 552.
Rallus arenarius, 145.
—— dasypus, 145.
—— lewini, 442.
—— longirostris cubanus, 453.
—— maculatus, 267.
—— monassa, 214, 252.
—— muelleri, 442.
—— plateni, 568.
—— sandwichensis, 253, 443.
—— tahitiensis, 215.
Recurvirostra andina, 156.
Regulus cristatus, 189.
—— tenerifæ, 189.
Rhamphococcyx erythrognathus, 415, 552.
Rhamphocœlus atrosericeus capitalis, 125.
Rhamphocorys clot-bey, 458, 459.
Rhinocichla treacheri, 385.
Rhinomyias gularis, 551.
—— pectoralis, 398, 551.
—— ruficrissa, 398, 547, 551.
Rhinoplax vigil, 410.
Rhinopomastes cyanomelas, 8.
Rhinortha chlorophæa, 415, 547.
Rhipidornis gulielmi-tertii, 461.
Rhipidura albicollis, 397, 426, 430.
—— buettikoferi, 251.
—— celebensis, 265.
—— cinnamomea, 452.
—— flabellifera, 510, 524.
—— fuliginosa, 510, 524.
—— hoedti, 265.
—— isura, 251.
Rhipidura javanica, 397.
—— meyeri, 452.
—— perlata, 397, 547, 551.
—— rosenbergi, 265.
—— setosa, 251.
—— sumbavensis, 265.
—— tenkatei, 129.
—— teysmanni, 265.
Rhizothera longirostris, 552.
Rhodacanthis flaviceps, 438.
—— palmeri, 103, 438.
Rhopodytes diardi, 415.
—— tristis, 433.
Rhopoterpe stictoptera, 264.
—— torquata, 264.
Rhynchæa capensis, 436.
Rhynchaspis variegata, 543.
Rhynchops flavirostris, 29.
Rhytidoceros subruficollis, 411.
—— undulatus, 410, 547.
Rissa tridactyla, 206, 357.
Rollulus roulroul, 423.
Rubigula montis, 392.
—— paroticalis, 391, 547, 551.
—— webberi, 391.
—— weberi, 547, 551.
Ruticilla sp., 78, 180.
—— moussieri, 456, 478.
—— phœnicurus, 188, 225.
—— rufiventris, 428.
—— titys, 132, 188.

Sapheopipo noguchii, 50.
Sarcidiornis mauritianus, 585.
Sarcogeranus leucogeranus, 439.
Sarcorhamphus æquatorialis, 344.
—— magellanicus, 344.
Sasia abnormis, 407.
Saxicola isabellina, 139.
—— leucomela, 583.
—— mœsta, 459.
—— œnanthe, 76, 180, 188, 225, 351.
—— pleschanka, 76, 180, 583.
Saxicola stapazina, 76, 180.
Sceloglaux albifacies, 511, 544.
Scelospizias badius, 341, 342.
—— brevipes, 342.
—— brutus, 342.
—— castanilius, 341.
—— cenchroides, 339, 341, 342.
—— francesi, 342.
—— poliopsis, 342.
—— polyzonoides, 342.
—— pusillus, 342.
—— sphenurus, 342.
—— tachiro, 342.
—— toussenelii, 342.
—— unduliventer, 341, 342.
Schizorhis concolor, 577.
Schœniclus australis, 183, 184.
Scolecophagus affinis, 271.
—— atro-violaceus, 453.
Scolopax rusticula, 204, 436.
Scops bourouensis, 117.
—— bouruensis, 417.
—— brookii, 117, 417.
—— elegans, 117, 339, 342, 559.
—— everetti, 417, 441.
—— giu, 68, 180.
—— insularis, 342.
—— lempiji, 417.
—— magicus, 417.
—— mantananensis, 117, 559.
—— pryeri, 52.
—— semitorques, 52, 342.
Scoptelus anchietæ, 576.
Selasphorus ardens, 134.
—— torridus, 134.
Sericulus chrysocephalus, 149.
Serinus canarius, 192.
Serpentarius secretarius, 142.
Sigmodus graculinus, 21.
—— tricolor, 21.
Siphia banyumas, 398.
—— beccariana, 398, 547, 551.
—— everetti, 399, 547, 551.
—— nigrigularis, 398, 547, 551.

Siphia pallidipes, 252, 426, 430.
—— turcosa, 551.
Sitagra ocularia, 23.
Sitta rupicola, 462.
—— syriaca, 462.
—— whiteheadi, 456.
Smilorhis leucotis, 11.
—— whytii, 6, 11.
Somateria mollissima, 354.
Sparganura sappho, 286.
Spatula clypeata, 153, 199.
—— variegata, 270.
Sphenocereus formosæ, 589.
Sphenœacus rufescens, 524.
Spilocorydon hypermetrus, 156.
Spilopelia tigrina, 420.
Spilornis bido, 348.
—— cheela, 433.
—— davisoni, 348.
—— holospilus, 348.
—— melanotis, 433.
—— minimus, 348.
—— pallidus, 419.
—— panayensis, 348.
—— raja, 552, 569.
—— rufipectus, 552.
—— sulaensis, 348, 552, 569
Spindalis zena, 316.
Spizaëtus alboniger, 418.
—— limnaëtus, 418.
Spizella atrogularis, 580.
Spizixus cinereicapillus, 428.
Spodiopsar cineraceus, 431.
—— sericeus, 431.
Squatarola helvetica, 169, 181, 203, 424.
Stachyris borneensis, 119, 386, 550.
—— davisoni, 119.
—— leucotis. 547, 550
—— maculata, 547.
—— poliocephala, 547.
Staphidia everetti, 386, 546, 547, 550, 563.
Stellula calliope, 148.
Stenopsis cayennensis, 319, 328.
Stephanophorus leucocephalus, 284.
Stercorarius antarcticus, 530.
—— catarrhactes, 129, 357.
—— crepidatus, 357.
—— parasiticus, 213.
—— pomarinus, 233.
Sterna albigena, 176, 181.
—— anæstheta, 178, 181, 215, 310.
—— antarctica, 530.
—— antillarum, 310, 337.
—— bergi, 177, 181.
—— cantiaca, 206.
—— caspia, 437.
—— dougalli, 310, 326, 337.
—— —— gracilis, 310.
—— elegans, 309.
—— eurygnatha, 309.
—— fluviatilis, 217, 309.
—— frontalis, 530.
—— fuliginosa, 178, 181.
—— gouldiæ, 177.
—— hirundo, 206, 217, 309, 310, 326, 337.
—— hybrida, 217.
—— macrura, 356.
—— maxima, 309, 326, 337.
—— media, 178, 181.
—— minuta, 177, 181, 310.
—— paradisea, 310.
—— saundersi, 177.
—— sinensis, 177, 437.
—— stolida, 212.
—— wilsoni, 310.
Stigmatops ocularis, 129.
Strepsilas interpres, 170, 181, 204, 213, 307, 436.
Stringops habroptilus, 159, 519, 544.
Strix flammea, 68, 124, 180, 196.
—— —— bargei, 124, 322.
—— numida, 377.
—— sauzieri, 585.
Sturnia sinensis, 431.
Sturnus vulgaris, 194, 225, 352.
Sublegatus glaber, 298, 318, 328.
—— platyrhynchus, 318.
Sula bassana, 198.
Sula fiber, 179, 181.
Surnia funerea, 132.
—— nyctea, 353.
Surniculus lugubris, 415.
Sutoria sutoria, 427.
Sycobrotus bicolor, 22.
—— stictifrons, 22.
Sylvia atricapilla, 186, 189.
—— conspicillata, 189.
—— heinekeni, 189.
—— melanocephala, 132, 189.
—— nisoria, 122.
Symplectes stictifrons, 22.
Synallaxis sp., 488.
—— albescens, 469, 488.
—— hudsoni, 469.
—— sordida, 487.
Synœcus australis, 127.
Syrnium leptogrammicum, 418.
Syrrhaptes paradoxus, 150.

Tachornis parva, 229.
Tachybaptes fluviatilis, 133, 272, 437.
—— nigricans, 272.
Tachycineta thalassina, 97.
Tachyornis hirundo, 145.
Tænioptera coronata, 469.
—— dominicana, 467.
Tanagra bonariensis, 468, 469.
Tantalus ibis, 465.
Tanysiptera ellioti, 156.
—— emiliæ, 156.
—— obiensis, 156.
Tapinopus ellioti, 145.
Tarsiger cyanurus, 48.
—— hodgsoni, 397.
Tatare longirostris, 128.
—— luscinia, 128.
—— mendanæ, 128.
—— rehesi, 214.
Telephonus anchietæ, 20.
—— senegalus, 20, 224.
Telespiza cantans, 438.
—— flavissima, 438.
Temnurus niger, 252.
—— schmackeri, 426, 431.
—— truncatus, 252.
Tephrodornis gularis, 394.

Tephrodornis pelvicus, 429.
Terekia cinerea, 171, 181, 437.
Terpsiphone affinis, 397, 547, 551.
—— cristata, 18.
—— paradisi, 74, 180.
—— perspicillata, 18.
—— princeps, 430.
Tetrao cristatus, 306.
Tetraophasis szechenyi, 573.
Thalassogeron cautus, 572.
—— culminatus, 573.
—— salvini, 572.
Thalassornis leuconota, 142.
Thamnolæa nigra, 128.
—— shelleyi, 127.
Thereiceryx lineatus, 239.
—— phæostictus, 238, 239.
—— viridis, 239.
—— zeylonicus, 237, 239.
Thinornis novæ-zealandiæ, 445, 528, 546.
Thriponax javensis, 408.
—— kalinowskyi, 155.
Thryophilus castaneus, 263.
—— costaricensis, 263.
—— thoracicus, 263.
Thryothorus atrigularis, 263.
Tichodroma muraria, 448.
Tiga javanensis, 408.
Tinnunculus alaudarius, 65, 180, 97
—— alopex, 344.
—— cinnamominus, 488.
—— sparverius, 303.
—— —— brevipennis, 303, 321, 332.
Tockus melanoleucus, 8.
Todus multicolor 453.
Totanus acuminatus, 184.
—— calidris, 172, 181, 205, 437.
—— canescens, 205.
—— flavipes, 308.
—— fuscus, 437.
—— glareola, 205, 437.
—— glottis, 437.
—— hypoleucus, 53.
—— macularius, 325.
—— melanoleucus, 334.
Totanus stagnatilis, 437.
Trachycomus ochrocephalus, 391.
Tragopan melanocephala, 436.
—— satyra, 436.
Treron sp., 165, 181.
—— baramensis, 421.
—— capellei, 422.
—— delalandii, 28, 230.
—— fulvicollis baramensis, 421.
—— nasica, 421.
—— nipalensis, 426, 435.
—— olax, 421.
—— permagna, 51.
—— vernans, 421, 548.
Trichixus pyrrhopygus, 384, 547.
Tricholestes criniger, 390
Tricholimnas lafresnayanus, 260.
Trichophoropsis typus, 390, 547.
Trichostoma rostratum, 119, 387, 550.
Tringa acuminata, 120, 181, 183, 184.
—— alpina, 171, 181, 264, 356, 361, 362, 563, 565.
—— australis, 182, 184.
—— canutus, 263, 436.
—— cinclus, 437.
—— crassirostris, 436.
—— maculata, 120, 468.
—— minuta, 130, 171, 181, 205.
—— minutilla, 335.
—— platyrhyncha, 437.
—— ruficollis, 437.
—— subarcuata, 437.
—— subarquata, 205.
—— temmincki, 130, 272, 437.
Tringoides hypoleucus, 171, 181, 437.
—— ochropus, 205.
Trochalopterum canorum, 427.
—— cinnamomeum, 480.
Trochilus alexandri, 97, 98.
—— rufus, 93.
Trochocercus albonotatus, 6, 19.
Troglodytes borealis, 351.
—— furvus, 469.
Troglodytes parvulus, 351.
Turacus livingstonii, 9.
Turdinulus exsul, 388, 547, 550.
Turdinus abbotti, 549.
—— atrigularis, 387, 388, 547, 550.
—— canicapillus, 387, 547 550.
—— kalulongæ, 547, 548, 568.
—— magnirostris, 548, 549, 568.
—— sepiarius, 549, 568.
—— tephrops, 547, 549, 568.
Turdus concolor, 220.
—— fumidus, 220.
—— fuscatus, 595.
—— gurneyi, 13.
—— hypopyrrhus, 220.
—— javanicus, 219.
—— libonyanus, 12.
—— merula, 187.
—— milanjensis, 6, 12.
—— musicus, 187.
—— nigricrissus, 220.
—— olivaceus, 12.
—— pilaris, 187, 351.
—— schlegeli, 221.
—— sibiricus, 273.
—— sordidus, 578.
—— torquatus alpestris, 589.
—— —— typicus, 589.
—— ulietensis, 215.
—— varius, 371, 372.
—— viscivorus, 371.
—— (Merula) fumidus, 220.
Turnagra crassirostris, 519.
Turnix dussumieri, 436.
—— lepurana, 168, 181.
—— melanotus, 143.
Turtur auritus, 231.
—— capicola, 28.
—— chinensis, 435.
—— communis, 200, 355.
—— damarensis, 230.
—— humilis, 435.
—— orientalis, 51
—— picturatus, 588.
—— risorius, 165, 181, 230.
—— rupicola, 435.
—— semitorquatus, 28, 230.

Turtur senegalensis, 165, 181.
—— shelleyi, 588.
—— tigrinus, 420, 563.
Turturœna delegorguei, 589.
—— incerta, 588.
—— sharpei, 588, 589.
Tympanistria bicolor, 231.
—— tympanistria, 29.
Tyrannus dominicensis, 298, 319, 328, 337.
—— griseus, 319.
—— melancholicus, 469.
—— rostratus, 319, 337.

Upupa africana, 8.
—— epops, 73, 180, 195.
—— indica, 432.
Uræginthus cyanogaster, 26.
Uria grylle, 358.
—— troile, 358.
Urocissa erythrorhyncha, 431.
Urococcyx erythrognathus, 415, 548.
Urodynamis taitiensis, 212.
Uroloncha sp., 82, 180.
—— fuscans, 401.
Uroloncha leucogastra, 401.
Urospizias approximans, 349.
—— cruenta, 349.
—— sharpii, 349.
—— torquata, 349.

Vanellus cristatus, 203.
—— inornatus, 29.
—— vulgaris, 355.
Vestiaria coccinea, 106.
Vidua ardens, 25.
—— principalis, 25.
Viridonia maculata, 571.
Vultur monachus, 448.

Xantholæma australis, 240.
—— duvauceli, 413.
—— hæmatocephala, 235, 240.
—— intermedia, 240.
—— malabarica, 240.
—— rosea, 240.
—— rubricapilla, 240.
Xanthopygia cyanomelæna, 547.
—— narcissina, 396.
Xema sabinii, 137, 150.
Xenocichla flavostriata, 13.
Xenocichla fuscicepa, 6, 13.
—— nigriceps, 13.
Xylolepes validus, 407, 548.

Zanclostomus javanicus, 415, 548, 552.
Zenaida vinaceo-rufa, 304, 324, 334.
—— yucatanensis, 588.
Zonophaps forsteri, 588.
Zonotrichia pileata, 295, 314.
Zosterops anderssoni, 118.
—— aureiventer, 218, 219, 552.
—— cærulescens, 217, 517, 525.
—— fallax, 218, 219.
—— flava, 218, 219.
—— gallio, 218, 219.
—— javanica, 218, 219.
—— neglecta, 219, 258.
—— palpebrosa, 48, 218, 258.
—— —— simplex, 48.
—— senegalensis, 118.
—— simplex, 218.
—— squamifrons, 281, 401, 552, 561.

INDEX OF CONTENTS.

1893.

Aden, birds of, 57, 165; exhibition of birds from, 116; map of, plate iv.; suggested as a place for an ornithological excursion, 265.

Africa, description of some new species of birds from, 118; Junker's travels in, noticed, 137, 138; on the birds of the Sulymah River, noticed, 128; notes on birds observed in Eastern, 223; birds from East, noticed, 587; 'The Sportsman in South,' noticed, 141; Spatula clypeata in South, 153.

Agassiz, A., report on the Museum of Comparative Zoology at Harvard College, noticed, 451.

'Αλκυών, on the bird indicated by, 215.

Allen, J. A., on the North-American species of the genus Colaptes, noticed, 124; a new Gallinule from Gough Island, noticed, 125; notice of some Venezuelan birds, noticed, 125.

America, the species of the genus Colaptes of N., 124; life-histories of the birds of N., noticed, 126; geographical distribution in N., noticed, 139.

Angola, birds of, noticed, 576.

Antigua, birds of, 158.

Antipodes Island, on a species of Platycercus from, noticed, 133.

Aplin, O. V., arrival in Uruguay of, 161; news of, 284; return from Uruguay of, 477.

Apteryx, development of, noticed, 143; exhibition of living specimens of, 573; notes on the genus, 573.

Aptornis, on the genus, noticed, 135.

Argentina, extinct giant birds of, 40; bird-migration in, 467; notes on the birds of Estancia Sta. Elena, 483.

'Argyll, A Vertebrate Fauna of,' noticed, 136.

Arizona, birds of, noticed, 147.

Aruba, a new Conurus from, 249; birds of, 289, 293.

Astrachan, on Aquila rapax from, noticed, 459.

Australia, nests and eggs of birds found breeding in, noticed, 142.

Austro-Hungary, the birds of, noticed, 459.

Bailly's 'Ornithologie de la Savoie,' 475.

Banffshire, nesting of the Dotterel and Snow-Bunting in, 569, 593.

Baram District, Avifauna of, 381.

Barbets, on some genera of Oriental, 234.

Barboza du Bocage, J. V., on the birds of Benguela, noticed, 126; the birds of Dahomey, noticed, 127; on the birds of Angola, noticed, 576.

Barnes, H. E., on the birds of Aden, 57, 165; exhibition of birds sent from Aden by, 116.

Batrachostomus, a new species of, noticed, 135.

Baza, note on the Bornean, 553.

Beddard, F. E., on the osteology, pterylosis, and muscular anatomy of the American Fin-foot (Heliornis surinamensis), 30.

Belornis, new generic name proposed, 568.

Bendire, C., 'Life-histories of North-American Birds,' noticed, 126.

Benguela, Bocage on birds from, noticed, 126.
Berlepsch, H. Graf v., on a remarkable new Finch from the Highlands of Bolivia, 207.
Bidwell, E., exhibition of a fractured humerus of a Coot, 440.
Bill, on a point in the mechanism of the bird's, 361, 563, 592.
'Biologia Centrali-Americana,' noticed, parts ciii. & civ., 134; parts cv. & cvi., 267.
Blaauw, F. E., letter on the occurrence of Xema sabinii in Holland, 150; letter on the immature plumage of Ajaja rosea, 465.
Blagg, E. W. H., notes on the nesting of some Shetland birds, 350.
Blanford, W. T., on some genera of Oriental Barbets, 234.
Bolivia, a new Finch from, 207.
Bonaire, birds of, 289, 326.
Borneo, on a collection of birds from, 117; a new Owl from Mantanani, 117; new species of birds from Mount Dulit, 117; a new Spilornis from, 552, 569; note on the Baza of, 553; Mr. Everett's collections from N. Borneo and Sarawak, 559; exploration of Mount Kina Balu, noticed, 590.
Bower - Birds, Monograph of the, noticed, 461.
British Guiana, birds of prey of, noticed, 143.
'British Islands,' Lilford's 'Birds of the,' parts xviii.-xxi., noticed, 268; occurrence of Sylvia nisoria in the, 122.
British Museum, progress of Catalogue of Birds, 160; Catalogue of the Columbæ in the, noticed, 587; Report for 1892, 153.
British Ornithologists' Club, Inaugural Meeting of, 114; Bulletin of, 114, 248, 437, 567.
British Ornithologists' Union, Anniversary Meeting of, 472.
Bruce, W. S., in the Antarctic Seas, 161.
Bryden, H. A., 'Gun and Camera in South Africa,' noticed, 577.
Buck, W. J., and Chapman, A., 'Wild Spain,' noticed, 453.
Buckley, T. E., and Harvie-Brown, J. A., 'A Vertebrate Fauna of Argyll and the Inner Hebrides,' noticed, 136.
Budapest International Ornithological Congress, Report, noticed, 144.
Buller, W. L., Notes and Observations on New Zealand Birds, noticed, 127; further notes and observations on certain species of New Zealand birds, noticed, 127; on the Kiwi from Stewart Island (Apteryx maxima), noticed, 127.
Büttikofer, J., on the genus Tatare, noticed, 128; on the specific value of Levaillant's Traquet Commandeur, noticed, 128; on birds of the Sulymah River, W. Africa, noticed, 128; on a Weaver-bird from Sumatra, noticed, 129; on birds from the Islands of Flores, Sumba, and Rotti, noticed, 129; review of the genus Rhipidura, noticed, 265; additional note on the genus Rhipidura, noticed, 451; on Merula javanica and its allies, noticed, 452.

Caloosahatchie, on the birds of, noticed, 148.
Cambridge, the bird-collection in the University Museum at, 597.
Campbell-Orde, J., letter on the occurrence of Carduelis elegans and Passer montanus in North Uist, 592.
Canary Islands, birds observed in the, 185; map of the, 187.
Certhiola, note on the proper use of, 246.
Chapman, A., and Buck, W. J., 'Wild Spain,' noticed, 453.
Chapman, F. M., notes on birds observed near Trinidad, Cuba, with remarks on the origin of West-Indian bird-life, noticed, 452.
Chatham Islands, exhibition of the osteological remains of birds from the, 254; description of Œstrelata axillaris from the, 264; exhibition of the eggs of some birds of the, 445; list of the birds of the, 521.
Cherrie, G. K., on two new Flycatchers from Costa Rica, noticed, 129.
Chili, exhibition of Phalaropus fulicarius from, 570; notes on the birds of, 595.
China, on the birds of, noticed, 135.
Chionididæ, the systematic position of the, noticed, 589.
Clarke, W. E., report on the Great Skua in Shetland, noticed, 129.
Claws and spurs of the bird's-hand, noticed, 144.
Cœreba, on the proper use of the term, 246.
Colaptes, North-American species of the genus, noticed, 124.
Collett, R., on the Birds of Arctic Norway, noticed, 130; letter on Megalæma versicolor procured by Mr. Baun in Foochow, 277; on Lanius excubitor and its allied forms, noticed, 454; on a collection of

Birds from Tonga, New Hebrides, noticed, 454.
Colours of Birds, noticed, 582.
Columbæ of the British Museum, noticed, 587.
Congo, birds from the, noticed, 586.
Cook, J. M., letter on the 'Crocodile Bird' of the Nile, 275.
Coot, exhibition of a fractured humerus of a, 410.
Cory, C. B., 'Catalogue of West-Indian Birds,' noticed, 266.
Costa Rica, two new Flycatchers from, noticed, 129.
Crocodile and its Bird, 470.
'Crocodile Bird' of the Nile, 275.
Crowley, P., exhibition of the nest and egg of Paradisea raggiana and the eggs of Chlamydodera cerviniventris and C. maculata, 248.
Cuba, notes on birds observed at Trinidad, noticed, 452.
Cumberland, Vertebrate Fauna of, noticed, 138.
Curaçao, birds of, 289, 311.

Dahomey, birds of, noticed, 127.
Dammar, a new Rhipidura from the Island of, 251.
Danish light-stations, birds observed at, noticed, 150.
Danube, ornithological excursion to the Lower, noticed, 583.
Dassen Island, Phalacrocorax neglectus breeding on, 277.
Davison, W. R., exhibition of types of some new species of birds described by, 118; obituary notice of, 478.
Death-Valley Expedition, Birds of the, noticed, 580.
Degen, E., paper on the Evolution of the Bird's Wing, 115.
'Devon, Birds of,' noticed, 131.
Disco, exhibition of an egg of Tringa canutus from, 263.
Dodo, additional bones from Mauritius of the, noticed, 584.
Dotterel nesting in Banffshire, 569.
Dresser, H. E., letter on omissions in the synonymy of the Meropidæ in the 'Catalogue of Birds in the British Museum,' 151; on Acredula caudata and its allied forms, 240; exhibition and description of a new species of Acredula from Macedonia, 248; exhibition and description of Cryptolopha xanthopygia obtained from the Island of Palawan by Mr. J. Whitehead, 263; notes on the synonymy of some Palæarctic Birds, 375.
Duck, a hybrid, noticed, 586.
Dulit (Mount), new Birds from, 117; avifauna of, 381.
D'Urban, W. S. M., and Mathew, M. A., 'Birds of Devon,' noticed, 131.

Ecuador, two new species of Humming-bird from, 449.
Eggs, cause of variation in the shape of, 359.
Eglington, W., and Nicolls, J. A., 'The Sportsman in South Africa,' noticed, 141.
Elliot, D. G., 'Monograph of the Pittidæ,' noticed, 578.
Eton College, letter on a collection of British Birds for, 593.
Evans, A. H., List of the Birds of the Melrose District, noticed, 132; on the breeding of the Sclavonian Grebe in Ross-shire, noticed, 133.
——, and Wilson, S. B., 'Aves Hawaiienses,' part iv., noticed, 463.
Everett, A. H., on a collection of Birds sent from Borneo by, 117; list of Birds collected on Mts. Penrisen and Poeh by, 550; Birds from N. Borneo and Sarawak, 559.
Extinct Giant Birds of Argentina, 40; Avifauna of New Zealand, noticed, 133; Birds from Mauritius, noticed, 584.

Fairbridge, W. B., letter on the occurrence of Spatula clypeata in South Africa, 153; letter on the breeding of Phalacrocorax neglectus on Dassen Island, 277.
Ferguson, R. S., and Macpherson, H. A., 'A Vertebrate Fauna of Lakeland,' noticed, 138.
Fin-foot, osteology, pterylosis, and muscular anatomy of the American, 30.
Finn, F., notes on Birds observed during a collecting Expedition to Eastern Africa, 223.
Finsch, O., letter on the method of snaring Birds of Paradise in New Guinea, 463.
Fisher, A. K., Hawks and Owls of the United States, noticed, 578; the Birds of the Death-Valley Expedition, noticed, 580.
Florence Museum, remarks on the mounted birds in the, 444.
Flores, on birds from the Island of, noticed, 129.
Florida, the birds of the Caloosahatchie region, noticed, 148.
Flycatchers, two new Costa Rican, noticed, 129.

Foochow, letter on Megalæma versicolor in, 277.

Forbes, H. O., Additions to the Extinct, Avifauna of New Zealand, noticed 133; on a species of Platycercus from Antipodes Island, noticed, 133; note on Cabalus modestus, 253; exhibition and remarks on the osteological remains of birds from the Chatham Islands, and description of the new genera Diaphorapteryx and Palæocorax, 254; letter on the identity of Cyanorhamphus erythrotis and C. hochstetteri, 280; exhibition of the eggs of some rare Chatham Islands' birds, 445; exhibition of the adults and young of Cabalus modestus, 445; note discarding his new genus Diaphorapteryx, 450; exhibition of the tibia of Palæocasuarius and description of two new species, 450; a list of the birds inhabiting the Chatham Islands, 521.

Formosa, two new species of birds from, 469.

Fossil birds of the Oregon Desert, noticed, 270.

Foster, L. S., on the Published Writings of G. N. Lawrence, noticed, 455.

France, distribution of birds in, 448.

Gadow, H., and Newton, A., 'Dictionary of Birds,' noticed, 584.

——, and Newton, E., on additional bones of the Dodo and other extinct birds from Mauritius, noticed, 584.

Game-birds, remarks on the classification of the, 265; exhibition of some rare species of, 441.

Geographical Distribution in North America, noticed, 139; of British Birds, 262.

Germany, Pratincola rubicola in N.E., noticed, 270.

Giglioli, E. H., and Manzella, A., 'Iconografia dell' Avifauna Italica,' fasc. xxviii.-l., noticed, 455.

Gilbert Islands, remarks on the birds of the, 210.

Gizzard-stones of the Moa, noticed, 134.

Godman, F. D., and Salvin, O., 'Biologia Centrali-Americana,' noticed, parts ciii. and civ., 134; parts cv. and cvi., 267.

Godwin-Austen Collection of Birds, 157.

Goose, exhibition of a hybrid, 265.

Gordon, W. J., 'Our Country's Birds,' noticed, 456.

Gough Island, a new Gallinule from, noticed, 125.

Gould, J., Index to the works of, noticed, 461.

Goura, a new subspecies of noticed, 583.

Graaf, H. W. de, letter on the occurrence of Numenius tenuirostris and Glareola pratincola in Holland, 150.

Grant, W. R. O., description of a new species of Caloperdix, 117; diagnosis of Caloperdix sumatrana, 118; remarks on the classification of the Game-birds, and on the changes of the plumage in the Tetraonidæ, 265; exhibition of some skins of rare species of Game-birds, 441; on the breeding of the Snow-Bunting and the Dotterel in Banffshire, 569.

Great Bustards in the Zoological Gardens, 476.

Grebe, Sclavonian, breeding in Ross-shire, noticed, 133.

Greenland, exhibition of an egg of Tringa canutus from Disco, 263; the Birds of West, noticed, 149; the Birds of South, noticed, 581.

Gregory, J. W., and the Villiers Expedition, 161.

Gruidæ, new genera of, 439.

Gurney, J. H., on the Collection of Raptorial Birds in the Norwich Museum, 338.

Hainan, birds of, 424; new species of birds from, 54; exhibition of Mr. Styan's types from, 251.

Hamilton, A., on Moa Gizzard-stones, noticed, 134; on the Genus Aptornis, noticed, 135.

Hartert, E., descriptions of some new species of birds from the Dutch West Indies, 123; on a new Batrachostomus, noticed, 135; exhibition and description of a new Conurus from Aruba, 249; exhibition of the type-specimen of Hemignathus lanaiensis, 265; exhibition of the skin of a hybrid goose, 265; on the birds of the Islands of Aruba, Curaçao, and Bonaire, 289; exhibition of some birds from the Sandwich Islands and Laysan, 438; exhibition and description of Euetheia sharpei from the Dutch West Indies, 440; exhibition and description of Pisorhina solokensis from Sumatra, 441.

Hartlaub, G., on the birds of China, noticed, 135; remarks by Dr. Sharpe on the paper 'Vier seltene Rallen' written by, 252; on four new Rails,

noticed, 267; extract of a letter from, on Pennula ecaudata and P. sandwichensis, 256.
Harvard College Museum of Comparative Zoology, Report, noticed, 451.
Harvie-Brown, J. A., Contributions to the Fauna of the Shetland Isles, noticed, 456; letter on the nesting of the Snow-Bunting in Banffshire, 593.
——, and Buckley, T. E., 'A Vertebrate Fauna of Argyll and the Inner Hebrides,' noticed, 136.
Hatch, P. L., 'The Birds of Minnesota,' noticed, 581.
Hawaii, Birds of, noticed, 463; notes on collecting in Kona, 101.
Hawks of the United States, noticed, 578.
'Hebrides (Inner), A Vertebrate Fauna of,' noticed, 136.
Heliornithidæ, distribution of the, 438.
Helm, F., and Meyer, A. B., Sixth Report on the Birds of Saxony, noticed, 141.
Helms, O., the Birds of South Greenland, noticed, 581.
Holland, Numenius tenuirostris and Glareola pratincola in, 150; Xema sabinii in, 150.
Holland, A. H., letter on Bird-migration in Argentina, 467; field-notes on the Birds of Estancia Sta. Elena, Argentine Republic, with remarks by P. L. Sclater, 483; news from Argentina of, 477.
Hose, C., new species discovered on Mount Dulit by, 117; on the avifauna of Mount Dulit and the Baram District in the Territory of Sarawak, 381; new species of birds from Mt. Kalulong, 568; return to Borneo of, 476.
Hudson, W. H., 'Idle Days in Patagonia,' noticed, 457; 'Birds in a Village,' noticed, 581.
Humming-birds, Memoir on the, noticed, 147; of Paraguay, 285; two new species of, 449; and Swifts, comparative notes on, 84. 365.
Hutton, F. W., the Moas of New Zealand, noticed, 137.
Hybrids, Duck, noticed, 586; Goose, exhibited, 265; Wild-bred, noticed, 149.

Ichthyornis, notes on, noticed, 590.
International Ornithological Congress at Budapest, Report, noticed, 144.
Ireland, Sheathbill in, 286; Ampelis garrula in, 463.
Italy, 'Iconografia dell' Avifauna Italica,' fasc. xxviii.-l., noticed, 455.

Jackson, F. G., Polar Expedition, 286.
James, H. B., obituary notice of, 162.
Japan, additions to the avifauna of, noticed, 272; on a collection of birds from Yezo, noticed, 272.
Java, the species of Zosterops found in, 217; the species of Merula found in, 219; a new species of Merula from, 257; a new species of Zosterops from, 258.
Junker, W., 'Travels in Africa,' noticed, 137, 138.

Kaiser-Wilhelms-Land, birds of, noticed, 140.
Kalulong (Mount), list of birds from, 546; new species of birds from, 568.
Keeler, C. A., 'On the Colours of Birds,' noticed, 582.
Kina Balu (Mount), letter on a collection of birds from, 281; additions to the avifauna of, 560; exploration of, noticed, 590.
Kiwi from Stewart Island, noticed, 127.
Koenig, A., Second Report on the Birds of Tunis, noticed, 457.
Kona, notes on collecting in, 101.

'Lakeland, A Vertebrate Fauna of,' noticed, 138.
Lanai, a new species of Hemignathus from, 256.
Lancashire, vertebrate fauna of, noticed, 138.
Lawrence, G. N., the published writings of, noticed, 455; on the validity of Chrysotis canifrons, 566.
Laysan, exhibition of some birds from, 438; description of Diomedea immutabilis from, 448.
Le Souëf, D., on the nesting of Queen Victoria's Rifle-bird, noticed, 459.
Leverkühn, P., new appointment and change of address of, 598.
Lilford, Lord, 'Coloured Figures of the Birds of the British Islands,' parts xviii.-xxi., noticed, 268.
Liu Kiu Islands, exhibition of some birds from the, 116.
London, Birds of, noticed, 590; 'London Birds and London Insects,' noticed, 270, 586.
Loo-Choo Islands, notes on the birds of the, 47; exhibition of some birds from the, 116.
Lord Howe Island, additions to the avifauna of, noticed, 269.

Lorenz, L., the birds of Austro-Hungary, noticed, 459, 597; ornithological excursion to the Lower Danube, noticed, 583.

Lucas, F. A., Swifts and Humming-birds, 365.

Lydekker, R., on the extinct giant birds of Argentina, 40; contemplated visit to the Museums of the Argentine Republic, 477.

Lyre-bird, Prince Albert's, in captivity, 160.

Macedonia, a new species of Acredula from, 248.

Macpherson, H. A., and Ferguson, R. S., 'A Vertebrate Fauna of Lakeland,' noticed, 138.

Mantanani, a new Owl from, 117.

Martorelli, G., on the migration of birds, noticed, 268.

Mathew, M. A., and D'Urban, W. S. M., 'Birds of Devon,' noticed, 131.

Mauai, exhibition of Palmeria mirabilis, from, 249.

Mauritius, on the bones of extinct birds from, noticed, 584.

Meade-Waldo, E. G., list of birds observed in the Canary Islands, 185.

Melrose District, birds of the, noticed, 132.

Menzbier, M., on the occurrence of White's Thrush in European Russia, 371.

Merriam, C. H., on geographical distribution in North America, noticed, 139

Merula, the species of, found in Java, 219.

Mexico, two new forms of Basileuterus rufifrons from, noticed, 148.

Meyer, A. B., birds from Kaiser-Wilhelm's-Land, noticed, 140; birds of Sumba, noticed, 141; on Aquila rapax from Astrachan, noticed, 459; on the egg of the Empress Augusta-Victoria's Paradise-bird, 481; on a new subspecies of Goura, noticed, 583.

——, and Helm, F., Sixth Report on the Birds of Saxony, noticed, 141.

Middendorff, bird-life of the Russian lighthouses, noticed, 268.

Migration of birds, paper on, noticed, 269; in Argentina, 467.

Milne-Edwards, A., letter proposing new names (Pelargocrex and Belornis) for the preoccupied names Pelargopsis and Tachyornis, 568.

Minnesota, the birds of, noticed, 581.

Moas of New Zealand, noticed, 137; gizzard-stones of, noticed, 134.

Mockler-Ferryman, A. F., 'Up the Niger,' noticed, 269.

Morris, F. O., obituary notice of, 237.

Moscow, birds of, noticed, 460.

New Guinea, snaring Birds of Paradise in, 463; 'British New Guinea,' noticed, 273.

New Hebrides, a collection of birds from Tonga, noticed, 454.

Newton, A., and Gadow, H., 'Dictionary of Birds,' noticed, 584.

Newton, E., and Gadow, H., on additional bones of the Dodo and other extinct birds from Mauritius, noticed, 584.

New Zealand, notes and observations on the birds of, noticed, 127; extinct avifauna of, noticed, 133; Moas of, noticed, 137; preservation of native birds of, 158, 283; a new Snipe from the New Zealand region, 446; notes on certain species of birds of, 509.

Nicaragua, two new species of birds from, 263.

Nicholski, Dr., theory accounting for the variation in the shape of eggs, 265.

Nicolls, J. A., and Eglinton, W., 'The Sportsman in South Africa,' noticed, 141.

Niger, Voyage up the, noticed, 269.

Norfolk, Tringa acuminata in, 120, 181.

Norfolk Island, additions to the avifauna of, noticed, 269.

North, A. J., on nests and eggs of Australian birds, noticed, 142; nesting of Manucodia comrii, noticed, 269; additions to the avifaunas of Tasmania and Norfolk and Lord Howe Islands, noticed, 269; on the nest and eggs of Gerygone magnirostris, 373; Oological Notes, noticed, 585.

Norway, the birds of Arctic, noticed, 130.

Norwich Museum, Raptorial Birds in the, 338.

Nyassaland, birds collected by A. Whyte in, 1; exhibition of a series of birds from, 120.

Olphe-Galliard, V. A. L., obituary notice of, 478.

Oregon Desert, fossil birds of the, noticed, 270.

Ornithological Works in Progress, 598.

Otides, new genera of, 449.

Oubangui, birds from, noticed, 586.

Oustalet, E., on birds from the Congo and Oubangui, noticed, 586.

Owls of the United States, noticed, 578.

Oxford University Museum, the Bird Collections in the, 156.

Palæarctic birds, synonymy of some, 375.

Palawan, description of Cryptolopha xanthopygia from, 263.

Paradise-bird, egg of the Empress Augusta-Victoria's, 481.

'Paradise-birds, Monograph of the,' noticed, 461; snaring, in New Guinea, 463.

'Paradiseidæ, Monograph of the,' noticed, 461.

Paraguay, Humming-birds of, 285.

Parker, T. J., observations on the development of Apteryx, noticed, 143; in England, 161.

Parus colletti, Stejneger, remarks on, 474.

'Patagonia, Idle Days in,' noticed, 457.

Patterson, R. L., letter on the occurrence of Ampelis garrula in Ireland, 463.

Pavesi, P., on a hybrid Duck, noticed, 586.

Pelargocrex, new generic name proposed, 568.

Penrisen (Mount), birds collected by A. H. Everett on, 550.

Perkins, R. C. L., notes on collecting in Kona, Hawaii, 101; progress of, in the Sandwich Islands, 595; news of, in Hawaii, 596.

Pigeons, Catalogue of, in the British Museum, noticed, 587.

Pigott, T. D., 'London Birds and London Insects,' noticed, 270, 586.

Pittidæ, review of the species of, 488; 'Monograph of the,' noticed, 578.

Platycercus, on a species of, from Antipodes Island, noticed, 133.

Poeh (Mount), birds collected by A. H. Everett on, 550.

Polar Expedition, New British, 286.

Prince Albert's Lyre-bird in captivity, 160.

Ptilonorhynchidæ, monograph of the, noticed, 461.

Ptilopus, a new species of, noticed, 460.

Pycraft, W. P., on a point in the mechanism of the bill in birds, 361, 592.

Queensland, exhibition of Geophaps plumifera from Northern, 570.

Quelch, J. J., Birds of Prey of British Guiana, noticed, 143.

Rail, four new species of, noticed, 267.

Rallidæ, classification of the, 258.

Raptorial birds in the Norwich Museum, 338.

Read, R., remarks on the changes of the plumage in the Black-headed Gull, 440; exhibition of an abnormally coloured Black-headed Gull, 444.

Reed, E. C., notes on the birds of Chili, 595.

Regàlia, E., claws and spurs of the bird's-hand, noticed, 144.

Reichenow, A., on birds from East Africa, noticed, 587.

Rendall, P., appointment of, as Medical Officer to the Sheba Gold Mining Company, 285; arrival in the Transvaal of, 478.

Rhipidura, review of the genus, noticed, 265; additional note on the genus, noticed, 451.

Rhoads, S. N., the birds of Texas and Arizona, noticed, 147.

Ridgway, 'The Humming-birds,' noticed, 147; two new forms of Basileuterus rufifrons from Mexico, noticed, 148.

Rifle-bird, nesting of Queen Victoria's, noticed, 459.

Ross-shire, Sclavonian Grebe breeding in, noticed, 133.

Rothschild, W., descriptions of three new birds from the Sandwich Islands, 112; description of a new species of Ptilopus, 121; exhibition of Palmeria mirabilis, 249; description of Anas laysanensis, 250; description of a new species of Hemignathus from Lanai, 256; letter on Loxops ochracea and its synonyms, 281; exhibition and description of the type specimen of Pseudonestor xanthophrys, 438; exhibition and description of Rallus muelleri, 442; exhibition and descriptions of three new birds from the Sandwich Islands, 442; exhibition of a melanistic variety of Alca torda and of examples of some Asiatic species of birds, 444; description of Diomedea immutabilis, from Laysan, 448; exhibition of a pair of Paradisea gulielmi-secundi, 450; exhibition of specimens of three species of Chasiempis from the Sandwich Islands, 570; descriptions of six new species of birds, 570; exhibition of examples of new species of birds and of living specimens of the various species of Apteryx, 573; notes on the genus Apteryx, 573.

Rotti, on birds from the Island of, noticed, 129.
Russia, bird-life on the .lighthouses of, noticed, 268; White's Thrush in European, 371.

Salvadori, T., characters of two new species of the genus Phlogœnas, 120; notes on Conurus rubritorques, 122; note on Mr. Forbes's remarks on Cabalus modestus, 255; letter on the distinctness of Cittocincla tricolor and C. melanura, 279; on a new species of Ptilopus, noticed, 460; letter on certain species of Cyanorhamphus, 466; 'Catalogue of the Birds in the British Museum,' vol. xxi. Columbæ, noticed, 587; note on Merula alpestris, noticed, 589.
Salvin, O., descriptions of two new species of birds from Nicaragua, 263; description of Œstrelata axillaris from the Chatham Islands. 264; descriptions of two new species of Humming-birds from Ecuador, 449.
——, and Godman, F. D., 'Biologia Centrali-Americana,' noticed, parts ciii. and civ., 134; parts cv. and cvi., 267.
Sandpiper, occurrence in Norfolk of the Sharp-tailed, 181.
'Sandwich Islands, Birds of the,' noticed, 463; three new birds from the, 112; exhibition of Palmeria mirabilis from Mauai, 249; a new species of Hemignathus from Lanai, 256; exhibition of Pseudonestor xanthophrys from the, 438; exhibition of some birds from the, 438; three new birds from the, 442; exhibition of specimens of Chasiempis from the, 570.
Santa Elena, notes on the birds of Estancia, 483.
Sarawak, notes on a collection of birds from, 117; avifauna of Mount Dulit and the Baram District, 381; map of Northern, 382; birds from Kalulong, 546, 568; birds of Mts. Penrisen and Poeh, 550; birds of N. Borneo and, 559; a new species of Spilornis from, 552, 569.
Satounine, K., on the birds of Moscow, noticed, 460.
Saunders, H., exhibition of a specimen of Œdemia nigra. 256; distribution of birds in France, 448.
Saxony, Sixth Report on the Birds of, noticed, 141.
Schalow, H., on Pratincola rubicola in N.E. Germany, noticed, 270.
Sclater, P. L., notes on the birds collected in Nyassaland by A. Whyte, 1; exhibition of some specimens of birds sent from Aden by Lieut. H. E. Barnes, 116; the bird collections in the Oxford University Museum, 156; birds of Antiqua, W.I., 158; on Tringa acuminata in Norfolk, 181; notes on Paramythia montium and Amalocichla sclateriana, 243; note on the proper use ef the generic terms Certhiola and Cœreba, 246; exhibition of Paramythia montium, 249; exhibition of a prepared wing and tail of Calodromas elegans, 256; extract of a letter from Dr. Hartlaub on Pennula ecaudata and P. sandwichensis, 256; Aden suggested as a place convenient for an ornithological excursion, 265; note on the 'Crocodile Bird' of the Nile, 277; note on Mr. Fairbridge's letter on Phalacrocorax neglectus breeding on Dassen Island, 279; remarks on the mounted birds in the Florence Museum, 444; note on the migratory birds which had visited the s.s. 'Oruba' between Gibraltar and Malta, 444; Great Bustards in the Zoological Gardens, 476; remarks on the birds of Estancia Sta. Elena, Argentine Republic, 483; exhibition of a skin of Phalaropus fulicarius from Chili, 570; exhibition of a skin of Geophaps plumifera from N. Queensland, 570.
Sclater, W. L., letter on the formation of a collection of British Birds for Eton College, 593.
Sclavonian Grebe breeding in Ross-shire, noticed, 133.
Scolopacidæ, on the mechanism of the upper mandible in the, 563.
Scott, W. E. D., the birds of the Caloosahatchie Region of Florida, noticed, 148.
Seebohm, H., notes on the birds of the Loo-Choo Islands, 47; exhibition of some birds from the Loo-Choo and Liu Kiu Islands, 116; exhibition of two examples of Tringa acuminata obtained on the Norfolk coast, 120; exhibition of Oreocincla cuneata, 122; remarks on the occurrence of Sylvia nisoria in the British Isles, 122; on the occurrence of the Sharp-tailed Sandpiper (Tringa acuminata) in Norfolk, 181; on the species of Zosterops found in the Island of Java, 217; on the species of Merula found in the Island of Java, 219; description of a new species of Crossoptilon, 250;

description of a new species of Merula from Java, 257; description of a new species of Zosterops from Java, 258; remarks on the Geographical Distribution of British Birds, 262; exhibition of an egg of Tringa canutus taken near Disco, Greenland, 263; explanation of Dr. Nicholski's theory accounting for the variations in the shape of eggs, 265; on the cause of variation in the shape of the eggs of birds, 359.

Sharpe, R. B., notes on a collection of birds sent from Borneo by Mr. A. H. Everett, 117; description of a new species of Owl from Mantanani, Borneo, 117; diagnoses of some new species of birds from Mount Dulit discovered by Mr. C. Hose, 117; exhibition of the types of some new species of birds described by W. R. Davison, 118; description of Stachyris davisoni, 119; description of a new species of Rhipidura from the island of Dammar, 251; exhibition of the types of Hainan birds described by F. W. Styan, 251; remarks on Dr. Hartlaub's paper 'Vier seltene Rallen,' 252; on the authority for the name Acredula macedonica, 255; on the classification of the Rallidæ and descriptions of new genera, 258; exhibition of, and remarks upon, some specimens of Ocydromi, 261; distribution of the Heliornithidæ and description of a new genus, 439; diagnoses of some new genera of Gruidæ, 439; note on Pennula sandwichensis and P. ecaudata, 444; note on Grus cinerea longirostris, 444; remarks on fossil birds, 445; on new genera of Otides, 449; 'Analytical Index to the Works of the late John Gould,' noticed, 461; 'Monograph of the Paradiseidæ,' part ii. noticed, 461; Bornean Notes (birds from Mt. Kalulong; birds from Mts. Penrisen and Poeh; a new Spilornis; note on the Baza of Borneo; birds from N. Borneo and Sarawak; additions to the avifauna of Mt. Kina Balu; and description of the nest and eggs of Staphidia everetti), 546; exhibition of the type of Rallus plateni, and description of a new genus Aramidopsis, 568; characters of new species of birds from Mount Kalulong, 546, 568; new species of Spilornis from Sarawak, 552, 569.

Sheathbill in Ireland, 286.

Shelley, G. E., list of birds collected by Mr. Alexander Whyte in Nyassaland, 1; descriptions of some new species of African birds, 118; exhibition of a series of birds from Nyassaland, 120.

Shetland, the Great Skua in, noticed, 129; notes on the nesting of some birds of, 350; contributions to the fauna of the Shetland Isles, noticed, 456.

Shufeldt, R. W., comparative notes on the Swifts and Humming-birds, 84; on fossil birds of the Oregon Desert, noticed, 270; on the mechanism of the upper mandible in the Scolopacidæ, 563; on the systematic position of the Chionididæ, noticed, 589; notes on Ichthyornis, noticed, 590.

Shufeldt, R. W., Jun., obituary notice of, 164.

Skua, Great, in Shetland, noticed, 129.

Smith, W. W., notes on certain species of New Zealand birds, 509.

Snaring Birds of Paradise in New Guinea, 463.

Snow-Bunting nesting in Banffshire, 569, 593.

'Spain, Wild,' noticed, 453.

Spilornis, a new species from Borneo of, 552, 569.

Spurs of the bird's-hand, noticed, 144.

Stejneger, L., addition to the Japanese avifauna, noticed, 272; on a collection of birds from the Island of Yezo, Japan, noticed, 272.

Stewart Island, on the Kiwi of, noticed, 127.

Stolzmann, J., contribution to the ornithology of Transcaspia, noticed, 462.

Stone, W., the birds of West Greenland, noticed, 149.

Styan, F. W., on five apparently new species of birds from Hainan, 54; exhibition of the types of Hainan birds collected by, 251; on the birds of Hainan, 424; letter on two new species of birds from Formosa, 469.

Suchetet, A., on wild-bred hybrids, noticed, 149.

Sulymah River, on the birds of the, noticed, 128.

Sumatra, description of Pisorhina solokensis from, 441.

Sumba, on birds from the Island of, noticed, 129, 141.

Surnames taken from birds, 159.

Swann, H. K., the birds of London, noticed, 590.

Swifts and Humming-birds comparative notes on, 84, 365.

Tagora, on Emberiza pusilla from, 117.

Tasmania, nests and eggs of birds found breeding in, noticed, 142; additions to the avifauna of, noticed, 269.

Tatare, notes on the genus, noticed, 128.

Texas, birds of, noticed, 147.

Thomson, J. P., 'British New Guinea,' noticed, 273.

Tonga, a collection of birds from, noticed, 454.

Transcaspia, ornithology of, noticed, 462.

Traquair, R. H., address on the word 'Museum,' noticed, 275.

Trevor-Battye, A., exhibition of some skins of Parus borealis and P. palustris, 248.

Tringa acuminata figured, plate v.

Trinidad (Cuba), notes on birds observed at, noticed, 452.

Tristram, H. B., on the bird indicated by the Greek 'Αλκυών, 215; on an undescribed species of Snipe from the New Zealand region, 446.

Tristram's Grakle in captivity, 476.

Tunis, report on the birds of, noticed, 457.

Turacin, notes on, 594.

Uist (North), Carduelis elegans and Passer montanus in, 592.

United States, Hawks and Owls of the, noticed, 578.

Venezuela, notice of some birds from, noticed, 125.

Vienna Museum, note on the number of specimens of Austro-Hungarian birds in the, 597.

Weaver-birds from Sumatra, noticed, 129.

West Indies, map of the, plate viii.; catalogue of the birds of the, noticed, 266; birds of Antigua, 158; origin of the bird-life of the, noticed, 452; new species of birds from the Dutch 123; description of Euetheia sharpei from the Dutch, 440.

Westmorland, Vertebrate Fauna of, noticed, 138.

White's Thrush in European Russia, 371.

Whitehead, J., description of Cryptolopha xanthopygia obtained in Palawan by, 263; letter on a collection of birds from Kina Balu, 281; contemplated expedition to the East, 478; a review of the species of the family Pittidæ, 488; exploration of Mount Kina Balu, N. Borneo, noticed, 590.

Whitely, H., obituary notice of, 287.

Whyte, A., birds collected in Nyassaland by, 1.

Wiglesworth, L. W., remarks on the birds of the Gilbert Islands, 210.

Wilson, S. B., and Evans, A. H., 'Aves Hawaiienses: the Birds of the Sandwich Islands,' part iv., noticed, 463.

Wing, on the evolution of the bird's, 115.

Winge, H., birds observed at the Danish light-stations, noticed, 150.

Withington, F., news from Mexico of, 284, 477.

Works (ornithological) in progress, 598.

Yezo, on a collection of birds from the Island of, noticed, 272.

Zoological Gardens, Great Bustards in the, 476.

Zosterops, the species of, found in Java, 217.

END OF VOL. V.

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